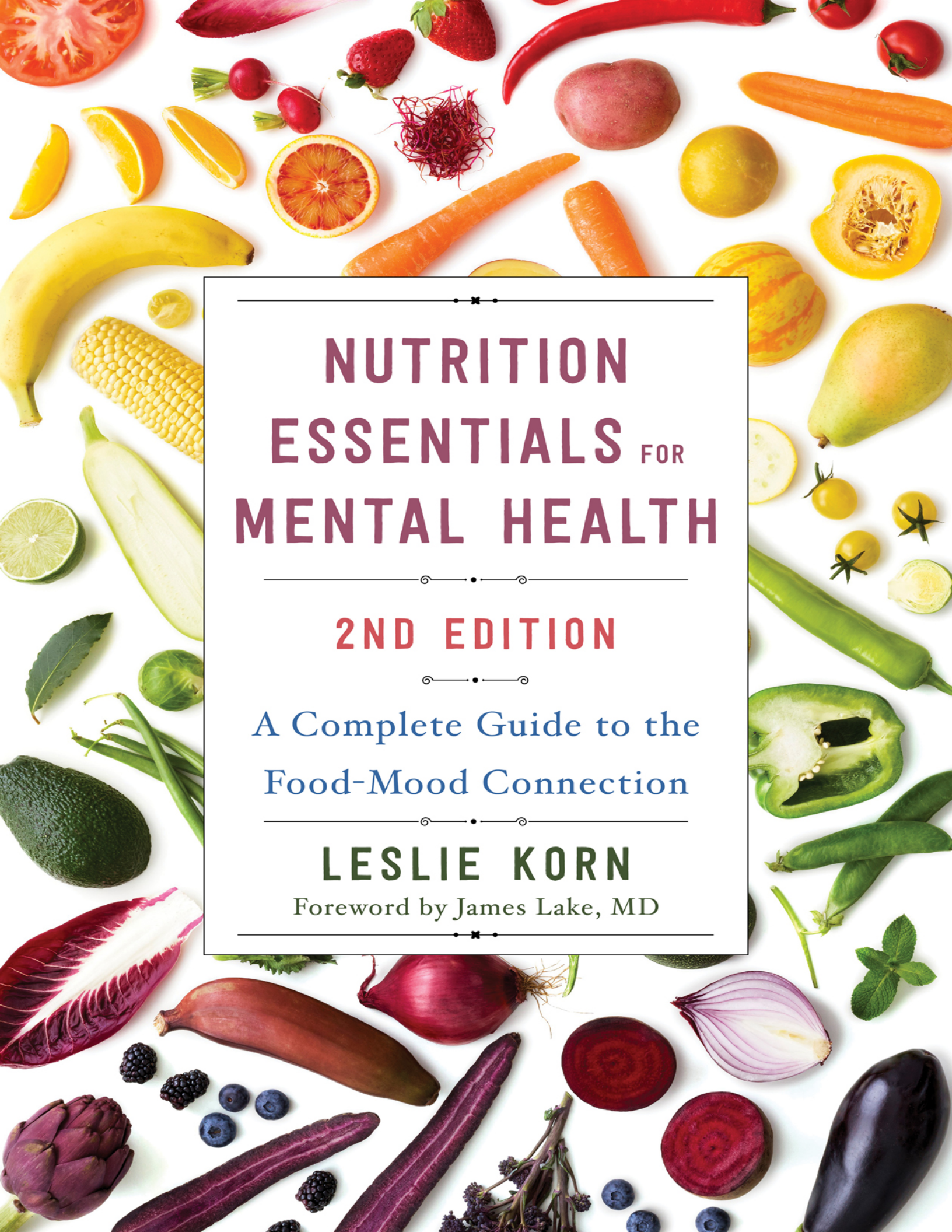

NUTRITION ESSENTIALS FOR MENTAL HEALTH

2ND EDITION

A Complete Guide to the Food-Mood Connection

LESLIE KORN

Foreword by James Lake, MD

Nutrition Essentials for Mental Health

A Complete Guide to the Food-Mood Connection

LESLIE KORN

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I am deeply grateful to my husband, Rudolph Rÿser, who died while I was writing the second edition of this book. For 30 years, he brought immense joy, intellect, and laughter to my life, which always soothed the rigors of completing a book. An accomplished writer, he stepped in without hesitation when I asked while writing the first edition to edit, give guidance, prepare great meals, and share unflagging optimism. He fills my heart, more than half of my overflowing cup.

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I am fortunate to benefit from family and friends who have been immensely supportive throughout the writing of this book. They were willing to read chapters to test my ideas' coherence and relevance, explore recipes, and lead the cheer. Having friends in "the field" helps. My yogini social worker friend Jill Charney took time from her busy life to offer valuable suggestions that helped me improve this book. My friend and colleague Dr. Mary Anne Osborne consistently offers invaluable insights, grounded in years of experience and delivered with a deep commitment to compassionate, healing-centered patient care. I am grateful to Dr. James Lake, a pioneer in integrative psychiatry, for his supportive reading of the text and writing the foreword. Dr. Nicholas Gonzalez, Gray Graham, and Dr. Ethan Russo shared their insights during the first edition, and those insights remain relevant for this second edition. Susan Butterworth generously offered suggestions on motivational interviewing and nutrition behavior change. Marlene Bremner, my longtime assistant and artist, always holds a steady oar to my projects, tracking all the minutiae while offering important editorial suggestions. I extend my heartfelt thanks to Deborah Malmud and Norton's exceptional editors and support staff, whose belief in this book has been unwavering. I am grateful to have been guided to the path of healing through nutrition when I lived for many years in the jungle of Mexico, beginning in 1973, and at first fell ill with all kinds of tropical illnesses. Village women fed me plants and foods to nourish my recovery, and they became lifelong friends, colleagues, and comadres. I have learned much of what I know about mental health nutrition from my

clients (both north and south of the border), who have courageously questioned the mental health status quo and sought my support for their health and healing. I rest on the foundation of my ancestors, whose love and presence endures in the hints and flavors of their culinary traditions from Eastern Europe.

Foreword

By James Lake, MD

> The doctor of the future will give no medication, but will interest his patients in the care of the human frame, diet and in the cause and prevention of disease.
>
> —Thomas A. Edison

Nutrition Essentials for Mental Health: A Complete Guide to the Food-Mood Connection (2nd ed.) is an authoritative resource on the role of nutrition in mental health. In these pages clinicians will discover many valuable clinical pearls and insights to guide them when advising their patients about practical, safe, effective, and affordable strategic approaches to eating and taking supplements for optimal health and well-being, as well as for preventing and treating common mental health problems. Almost a decade has passed since Dr. Korn's book was first published. In this short period significant advances have taken place in our understanding of how nutrition influences mental health and health in general. The second edition has been updated with valuable new material, including new research on the role of nutrition for depressed mood, anxiety, and many other mental health problems; the influences of proper nutrition on mitochondrial function; and emerging findings on probiotics that enhance wellness (i.e., psychobiotics), all backed up by extensive new references. Dr. Korn has also added several delicious new recipes aimed at optimizing mental health.

By examining the relationship between *what we eat* and how our bodies and brains function, Dr. Korn addresses complex problems of mental health prevention and treatment at the most fundamental level. Various chapters cover the importance of nutritional assessment in mental healthcare; the

best foods and nutrients for mental health; food allergies, sensitivities, and special diets; and practical strategies for supporting optimal brain health when weaning off psychotropic medications. Chapter 3 on nutritional assessment should be required reading for all mental health professionals. In this chapter, Dr. Korn provides a template for evaluating each patient's unique history; identifies pertinent medical, social, and family issues that affect nutrition; and explains how to assess clients for blood sugar handling, food allergies and sensitivities, inflammation, oxidative stress, mitochondrial energy production, and the methylation pathway, all of which play critical roles in health and mental health. As Dr. Korn explains, medical problems and mental illness often occur together; however, causal relationships between specific physical ailments and mental health problems are often difficult to discern. When a mental health problem is addressed with dietary changes that result in optimal nutrition, medical problems often improve. Sound nutrition advice should always comprise a cornerstone of a comprehensive integrative treatment plan. Even in cases where prescription psychotropic medications are a necessary part of treatment, simple changes in nutrition provide important "add-on" benefits to medications by optimizing levels of micronutrients critical for healthy brain functioning.

Dr. Korn offers clear, simple strategies that will guide you in helping clients think about foods that are better suited to their unique biochemical constitutions and mental health needs. The book provides a comprehensive, step-by-step review of the vital links between what we eat, how our brains function—or don't—and our capacity to *think and feel*. The book is a tour de force of the complex dynamic relationships that exist among the digestive process, the body, and the brain, beginning with the simple acts of chewing and swallowing and progressing through the complex phases of digestion and elimination. Dr. Korn introduces an important emerging concept in Western medicine called the "human microbiome," according to which health and mental health are viewed in relation to the *microbiome-gut-brain axis* (Foster & McVey Neufeld, 2013).

In the face of widespread and often inappropriate prescribing of powerful psychotropic medications, accumulating research evidence supports the use of a range of nonpharmacological approaches for the prevention and treatment of depressed mood, anxiety, dementia, substance abuse, and other common mental health problems. Diet, exercise, and stress

management fall under the broad heading of lifestyle changes, and among these, diet is certainly the most important. The relative contributions of diet and other aspects of healthy lifestyle to well-being and good physical and mental health cannot be isolated and are difficult to quantify. Many people who follow healthy diets have generally healthier lifestyles, may be more privileged socioeconomically than individuals who do not have healthy diets, have the leisure to engage in regular exercise, get consistent sleep, and practice mindfulness or listen to soothing music (Misuraca et al., 2017). In addition to general beneficial effects of proper nutrition, interventions using specific nutraceuticals can reduce inflammation and oxidative stress, optimize the gut microbiome, and modify neuroplasticity to mitigate mental health problems associated with these physiological dysregulations in the body and brain.

Epidemiological data on relationships between diet and prevalence rates of depressed mood, dementia, and other mental health problems confirm the central role of nutrition in the world's major healing traditions from earliest historical times. Changes in diet are frequently prescribed as a central part of treatment in Chinese medicine and Ayurveda, on the assumption that without addressing imbalances in the body and mind at a basic level, there may be little hope for changing the factors that manifest as illness. The ancient wisdom of recommending dietary changes for improved health and well-being is reflected in a quote attributed to Hippocrates, the father of Western medicine: "Let food be thy medicine, thy medicine shall be thy food." Findings of modern research studies strongly support this conventional wisdom. Epidemiological data and findings of controlled studies confirm that diet plays important roles in brain development, signaling networks and neurotransmitters, cognition and memory, mitigating deleterious effects of chronic inflammation, and epigenetic regulation of brain physiology (Ekstrand et al., 2021). The microbiome is essentially an ecosystem of symbiotic bacteria and a host of other microorganisms residing in the healthy gut. Recent studies demonstrate that the microbiome plays a critical role in brain development, behavior, and mental health throughout the lifespan. Bacteria in the microbiome activate neural pathways and central nervous system signaling systems that play a role in mood regulation, memory, and cognition. Research findings show that the gut microbiota are influenced by stress, diet, and a host of other factors in the environment, supporting Dr. Korn's thesis that interventions

based on dietary change and stress management are vitally important for prevention and treatment of common mental health problems.

Almost half of studies on nutrition and mental health published between 1971 and 2014 reported significant positive relationships between diet and depressed mood (Opie et al., 2015). A large population study revealed an alarming correlation between an increased prevalence rate of Alzheimer's disease in developing countries and multiple lifestyle factors related to increasing globalization, such as smoking, alcohol consumption, and the Western diet (i.e., high daily calories consumed and high consumption of animal fat in the diet; Grant, 2014). These results are consistent with the findings of a 36-month prospective trial in which healthy adults who followed a Mediterranean diet experienced a reduced rate of cognitive decline compared to individuals following a Western-style diet with fewer vegetables and high animal fat (Gardener et al., 2015). When working with patients in my private practice I frequently notice a relationship between skipped meals or generally poor nutrition and many common mental health problems such as depressed mood, anxiety, difficulty focusing, and sleep problems. Adding even a quick breakfast to one's daily routine and following simple guidelines for proper nutrition outlined in this book can sometimes lead to rapid improvement in these problems.

Diet and nutraceuticals influence epigenetic mechanisms starting with fetal development and continuing through the lifespan (Tiffon, 2018). Accumulating research findings support use of dietary change and select nutraceuticals as interventions in individuals diagnosed with depressive mood disorders (Marx et al., 2017). Select nutraceuticals involved in one-carbon metabolism, including choline, methionine, folic acid, B-6, and B-12, may play critical roles in activating epigenetic mechanisms during early development that reduce the risk of psychiatric disorders later in life (Bekdash, 2024).

In addition to the increased attention to the role of diet in maintaining optimal mental health, research findings from placebo-controlled studies support the use of high-potency nutraceuticals in the treatment of specific psychiatric disorders. For example, foods rich in B vitamins such as whole grains and leafy green vegetables may be especially beneficial for mood regulation. Some B vitamins are essential cofactors that facilitate synthesis of neurotransmitters centrally involved in mood regulation. Cumulative research findings show that omega-3 essential fatty acids improve learning,

memory, and school performance and enhance cognitive function in individuals with mild cognitive impairment. Research findings on the relationship between antioxidants and psychiatric disorders are mixed. Some observational studies reveal an association between blood levels of Vitamins C, E, and carotenoids and reduced risk of Alzheimer's disease, major depressive disorder, bipolar disorder, schizophrenia, posttraumatic stress disorder, and obsessive-compulsive disorder. However, other studies report nonsignificant protective effects of antioxidants. For example, a recent study did not find significant causal associations between circulating levels of diet-derived antioxidants and risk of major psychiatric disorders (Zhao et al., 2023). Reasons for inconsistent findings may include small sample sizes, confounding factors, and differences in study design.

Individuals with mental health problems who may be at risk of a nutritional deficiency because of their dietary preferences should be encouraged to take appropriate doses of vitamins, minerals, or other supplements that are known to be beneficial for their mental health problem. The subspecialty of nutritional psychiatry was recently established to develop an agenda for studies on dietary and nutraceutical interventions for achieving optimal wellness and treating specific mental health problems (Sarris, 2019). A few years ago, the science behind nutrition in mental healthcare received a significant boost when an international taskforce of 31 leading academics and clinicians from 15 countries published updated guidelines for uses of nutrient-based and plant-based interventions for a wide range of psychiatric disorders (Sarris et al., 2022). The new guidelines were offered as evidence-informed guidance for clinicians to aid them in deciding which supplements are safe and appropriate treatments of major psychiatric disorders. Specific supplements were supported by varying degrees of evidence as adjunctive treatments or monotherapies for certain psychiatric disorders. For example, strong evidence supported adjunctive use of omega-3 fatty acids and methylfolate in unipolar depression and the use of St. John's wort as a monotherapy for moderate depressed mood.

Optimal nutrition and the strategic uses of supplements should be included as a necessary and *central* component of integrative treatment addressing depressed mood, anxiety, bipolar disorder, substance abuse, attention-deficit/hyperactivity disorder, schizophrenia, cognitive decline, and dementia. Dr. Korn's fine book should be required reading for all psychiatrists and psychologists and, more important, for medical students

and residents in psychiatry, family medicine, internal medicine, and pediatrics, where education on nutrition has been historically lacking.

James Lake, MD, is the former chair of the International Network of Integrative Mental Health and the author of several textbooks on integrative mental health, most recently *An Integrative Paradigm for Mental Health Care: Ideas and Methods Shaping the Future* (2019) and the self-help series Alternative and Integrative Treatments in Mental Health Care (2015–), currently comprising 10 books (available at https://progressivepsychiatry.com/).

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List of Abbreviations

ACT, acceptance and commitment therapy
AD, Alzheimer's disease
ADHD, attention-deficit/hyperactivity disorder
AL, allostatic load
AN, anorexia nervosa
APOE, apolipoprotein E protein; *APOE4* alleles
ASD, autism spectrum disorder
b.i.d., twice a day (Latin *bis in die*)
BCAA, branched-chain amino acids
BDNF, brain-derived neurotrophic factor
BED, binge eating disorder
BFRB, body-focused repetitive behavior
BMI, body mass index
BN, bulimia nervosa
BPD, borderline personality disorder
CBD, cannabidiol
CBT, cognitive-behavioral therapy
CDP, cytidine-5'-diphosphate
cfu, colony-forming unit
CNS, central nervous system
***COMT*,** catechol-O-methyltransferase protein
CoQ10, coenzyme Q10
CRP, C-reactive protein
CYP, cytochrome P450

DBT, dialectical-behavioral therapy
DGBI, disorders of gut-brain interaction
DHA, docosahexaenoic acid
DHEA, dehydroepiandrosterone
DSM, *Diagnostic and Statistical Manual of Mental Diseases*, fifth edition; *DSM-V*
EBV, Epstein-Barr virus
eCB, endocannabinoid
EFA, essential fatty acid
EMDR, eye movement desensitization and reprocessing
EPA, eicosapentaenoic acid
ERMI, Environmental Relative Moldiness Index
5-HT, serotonin
5-HTP, hydroxytryptophan
5-MTHF, 5-methyltetrahydrofolate or L-methylfolate
FODMAPs, fermentable oligosaccharides, disaccharides, monosaccharides, and polyols
FU, fibrinolytic unit
GABA, gamma-aminobutyric acid
GAPS, gut and psychology syndrome
GERD, gastroesophageal reflux disease
GFAP, glial fibrillary acidic protein
GGC, gamma-glutamylcysteine
GI, gastrointestinal
GIP, glucose-dependent insulinotropic polypeptide
GLA, gamma-linolenic acid
GLP-1, glucagon-like peptide-1
GMO, genetically modified organism
GPC, glyceryl phosphorylcholine
HBOT, hyperbaric oxygen therapy
HCl, hydrochloric acid
HDL, high-density lipoprotein
HLA-DQ2, HLA-DQ8, HLA (human leukocyte antigen) genetic markers strongly associated with celiac disease
HPA axis, hypothalamic-adrenal-pituitary axis
HRV, heart rate variability
hs-CRP, high-sensitivity C-reactive protein

HTMA, hair tissue mineral analysis
IBS, irritable bowel syndrome
IgA, IgE, IgG, immunoglobulins A, E, and G
IU, international units
IV, intravenous
LDL, low-density lipoprotein
LDL-C, low-density lipoprotein cholesterol
Lp-PLA2, lipoprotein-associated phospholipase A2
MAOI, monoamine oxidase inhibitor
MCS, multiple-chemical sensitivity
MCT, medium chain triglyceride
MDMA, 3,4-methylenedioxymethamphetamine
ME/CFS, myalgic encephalomyelitis/chronic fatigue syndrome
MSG, monosodium glutamate
***MTHFR*,** 5,10-methylenetetrahydrofolate reductase gene
MUFAs, monounsaturated fats
NAC, N-acetylcysteine
NAD+, nicotinamide adenine dinucleotide
NADA, acupuncture protocol
NANP, National Association of Nutrition Professionals
NCGS, nonceliac gluten sensitivity
ND, naturopathic doctor
NDRI, norepinephrine-dopamine reuptake inhibitor
NES, night eating syndrome
NfL, neurofilament light chain
NMDA, methyl-D-aspartate
NO, nitric oxide
NOS, nitric oxide synthase
NSAID, nonsteroidal anti-inflammatory drug
NTs, neurotransmitters
OAT, organic acids test
OCD, obsessive-compulsive disorder
o.d., once daily (Latin *omne in die*)
P5P, pyridoxal 5'-phosphate (Vitamin B-6)
PANDAS, pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection
PANS, pediatric acute-onset neuropsychiatric syndrome

PASC, postacute sequelae of SARS-CoV-2 infection
PGX, pharmacogenomic testing
PLA2, phospholipase 2
PMDD, premenstrual dysphoric disorder
PMS, premenstrual syndrome
PPI, proton pump inhibitor
PQQ, pyrroloquinoline quinone
p.r.n., as needed (Latin *pro re nata*)
PSQI, Pittsburgh Sleep Quality Index
p-Tau 217, plasma phosphorylated tau 217
PTSD, posttraumatic stress disorder
PUFAs, polyunsaturated fats
PYY, peptide tyrosine tyrosine
RBC, red blood cell
RD, registered dietician
REM sleep, rapid eye movement stage of sleep
SAD, seasonal affective disorder
SAD diet, standard American diet
SAM, S-adenosyl-L-methionine
SARS-CoV-2, severe acute respiratory syndrome coronavirus 2
SCFA, short-chain fatty acid
SDMLB, state-dependent memory, learning, and behavior
SIBO, small intestinal bacterial overgrowth
SMART, specific, measurable, achievable, relevant, and time-bound
SNP, nucleotide polymorphism
SNRI, selective norepinephrine reuptake inhibitor
SPAQ, Seasonal Pattern Assessment Questionnaire
SSRI, selective serotonin reuptake inhibitor
TBI, traumatic brain injury
TCA, tricyclic antidepressant
TCM, traditional Chinese medicine
THC, tetrahydrocannabinol
t.i.d., three times a day (Latin *ter in die*)
TMJ, temporomandibular joint
TSH, thyroid-stimulating hormone
tTG, tissue transglutaminase
TTM, trichotillomania

Nutrition Essentials for Mental Health

1

Why Does Nutrition Matter in Mental Health?

Diet Essential: *Mood follows food—eat breakfast.*

There is no doubt that nutrition affects mental health. Poor nutrition leads to and exacerbates mental illness. Optimal nutrition prevents and treats mental illness. Note the word “optimal” for nutrition to prevent and treat illness. One’s diet cannot be just “good” or provide the basics to survive; it must be nutrient dense and tailored to the needs of the individual who may have been missing the basic ingredients for optimal brain function since life in the womb.

Where there is mental illness, there is poor diet. Where there is mental illness, there are digestive problems. By adding the lens of nutrition, diet, and digestion to your clinical toolbox, you will forever change your approach to client care and enhance client outcomes, without a doubt. I have written this book to take you step by step through all the essentials required for integrating nutritional therapies into mental health treatment. Even if you do not apply all of these approaches yourself, you will know about these therapies for referrals and collaborative work. Importantly, this book is designed for you to try the methods, techniques, and recipes on yourself so that you can enhance your well-being and stamina as you learn how to apply them in your practice.

Changing thoughts, beliefs, behaviors, and habits happens slowly in therapy. Changing nutritional beliefs and behaviors is no different. But

results are assured. Nutrition is biology, not ideology. This book is not ideological; it is practical. It is intended to provide concrete steps to modify beliefs and behaviors for healthful results.

Some people respond better to psychodynamic therapy methods, while others need and respond better to cognitive-behavioral therapy or solution-focused methods. Similarly, some people function better as carnivores while others function better as vegetarians. Knowing who you are and what your body needs is the art and science of mental health nutrition. But what is incontrovertible is that nutrition matters, and it is the most important missing link to mental health in society today.

In this chapter and the ones to follow, I will help you guide each client through each stage of dietary and nutritional change. While I suggest some first steps, much like a jigsaw puzzle you can start almost anywhere and begin to decipher the pattern that leads to improved health.

What is the Standard American Diet?

The standard American diet, or SAD diet, makes us sad! This all too frequently prescribed diet consists of overly processed foods containing refined sugars in fruit juices and sugary drinks and highly refined rice, pastas, and flours used in breads and bakery goods. These processed products are loaded with chemicals and synthetic preservatives, hormones, antibiotics, and food colorings that are known to alter our mood. This type of diet is a prime contributing factor resulting in health complaints for many clients. The SAD diet leads to chronic inflammatory states and sets the stage for neurotransmitter imbalances (Clemente-Suárez et al., 2023). Much of it is “fake food” with dozens of chemical ingredients created in the laboratory and not on the farm or in nature. Such so-called foods are designed to survive on the shelf for months at a time, thus reducing costs to manufacturers. The SAD diet is sad because it does not provide the nutrients our brain and body need to function well. That some of us survive (though rarely thrive) on a SAD diet is just the luck of the draw, and for some people illness comes in childhood or not until middle age, but it comes invariably, just as a car without the right fuel eventually sputters to a stop.

There are many reasons that people do not receive the nourishment their bodies need. Many experience chronic poverty or injury-related economic

loss that precludes access to high-quality, nutritious food. Some do not know what good nutrition is and are vulnerable to advertisements or medical myths. People may suffer deficits in self-care leading to poor nutrition, or they may have been hospitalized for extended periods during which they have been served poor-quality food cheaply acquired and prepared by the hospital. Still others who are addicted to substances such as alcohol, cocaine, or methamphetamines do not eat well or even enough at all, and what they do eat is not metabolized properly. Pharmaceutical medications, alcohol, and many commercially produced drugs deplete important nutrients needed by the body. One of the most important influences on mental health resulting from a poor or nutritionally deficient diet is the inflammatory response. Inflammation is now understood to underlie most mental illnesses, including depression, and people with higher levels of inflammation respond poorly to antidepressant therapies (Felger, 2019). Decreasing inflammation is so fundamental to healing that a separate discussion is necessary.

Inflammation and Mood

Escalating inflammation in the body and brain is one of the major consequences of the SAD diet. Chronic low-level inflammation contributes to depression, cognitive decline, and dementias (Hayley et al., 2021).

Some Factors Causing Inflammation in the Body

- Stress
- Poor-quality foods
- Physical inactivity
- Obesity
- Smoking
- Increased gut permeability
- Lack of sleep
- Toxic exposures
- Vitamin D deficiency

Everyone is familiar with the inflammation that occurs as a result of an injury, for example, a fall leading to a bruise or cut. The tissue becomes red

and swollen, and it is often painful. This is the body's natural immune response, helping us heal from injuries and infection. Similar inflammation also occurs systemically throughout the body but is often invisible. If this inflammatory response within the body is chronic, cell immune secretions remain turned on all the time. These cells produce proteins called *cytokines* that contribute to depression and to the breakdown of nerve cells. People who experience major depression have increased levels of inflammatory cytokines that, in turn, negatively affect neurotransmitter function. Certain foods such as refined sugars trigger these inflammatory cytokine responses in the body. These foods are called "dietary stressors." Other foods, like fresh berries, and herbs, like turmeric and ginger, can "quench the fires" of inflammation. Stimulating the anti-inflammatory cytokines can improve depressed mood and increase treatment response to conventional antidepressant medication by counterregulating production of pro-inflammatory cytokines. Stress is also a cause of inflammation and depression. Relaxation decreases the inflammatory response. The elimination of sugar helps stabilize mood and also reduces cytokine production (Fajstova et al., 2020), thereby reducing systemic inflammation. This is one of the first steps to take with all clients, whether they are depressed or not: reduce stress, eliminate inflammatory foods, and increase anti-inflammatory foods.

What Are Traditional, Authentic Diets?

One of the points I emphasize throughout this book is the concept of "traditional nutrition and foods." These are foods, diets, and preparation methods that have been used by our ancestors for millennia. They are foods that have evolved to optimize nourishment. In modern society, food and diet are often dissociated from authentic cultural traditions. There is social pressure to conform and relinquish healthy cultural traditions in the United States among immigrants and Indigenous populations as well. We are, however, experiencing revitalization across modern SAD-diet societies of reclaiming local, fresh, nutrient-dense, and optimally prepared traditional foods made relevant to our needs for the 21st century. Although these foods and methods remain inaccessible to many, especially the economically impoverished, this need not be the case. In this book I explain low-cost approaches to mental health nutrition. As you will see, food is much more

than nourishment: Food is medicine. Food is nutrition. Food is ceremonial. Food is sacred. Food is culture and tradition. Food is an anchor to culture and personal well-being. Food is the direct link between the environment and human health. It is the avenue by which a healthy environment can provide complete nutrition and a sense of integration and wellness. Yet for many of our clients, food is inaccessible, food is addicting, food is fraught with memories of harsh discipline or fights, or food is linked to the inner fight for a certain look or body, as occurs with body dysmorphia and eating disorders. In these cases, food becomes a metaphor as well as a substance that requires the integration of nutrition and counseling to decondition negative associations and beliefs and to regulate mood that affects self-care and overall health. The mental health clinician is ideally suited to this integrative partnership with the client.

Traditional or "authentic nutrition" approaches to mental health suggest that, to achieve health and well-being mentally and physically, we should eat the types of foods similar to the foods our ancestors ate. This means foods free of refined sugars and grains, with no synthetic preservatives or food coloring, and minimally processed. These foods should be prepared in their natural state. Traditional or authentic foods are low glycemic, anti-inflammatory, and rich in omega-3 fatty acids. Depending on the region of the world, these foods may include low to moderate or even high complex carbohydrates, moderate proteins, and moderate to high fats; antioxidant-rich fruits and vegetables of all colors; fiber sources, also known as prebiotics, which may include bark flour, psyllium, chia, cactus, bran, and oatmeal; and fermented foods such as kimchi, sauerkraut, and fresh natural yogurt and kefir to provide probiotics, now called "psychobiotics" due to their effects on mental health (Casertano et al., 2022), for digestion, colon health, and detoxification.

There is a tremendous diversity of foods, and we have the ability to adapt and use many foods from our neighbors as well as our ancestors. Some of our ancestors ate a diet of fresh blood and raw milk (and still do); others ate lots of blubber and fish and only a few carbohydrates in the forms of berries and roots during the summer months. Traditional diets obtain dietary fats from fish, birds, plants, and wild game. Wild animals are rich in essential fatty acids and have only one-tenth the fat of farmed cattle, nor do they have the harmful antibiotics and hormones that disrupt endocrine function and gut health. Not until 16th-century colonization of the Western

Hemisphere and 20th-century development brought refined flours, sugars, and soy protein as substitutes for their traditional diets did the Inuit located in the Arctic region suffer suicide, depression, and heart disease. The diet of people in late 19th-century Scotland included oats, turnips, potatoes, leeks, cabbage and kale, bitter greens like nettles and sorrel, sulfur-rich garlic, butter and cheeses, fish and shellfish, seaweed, game, and wild berries (Czapp, 2009). This diet today would serve the needs of many people of Scotland and other northern European areas very well. Oats (steel cut, not instant) and the straw from green oats, called oat straw, are medicinal nourishing foods that have powerful anxiolytic properties that I recommend for anxious clients.

Before the 16th century, wheat, beef from cattle, milk, and pork did not exist in the Western Hemisphere. Therefore, these foods may not be the most beneficial for peoples indigenous to the Western Hemisphere. By contrast, peoples in India evolved in a warmer climate with subtropical foods and an emphasis on more vegetables and carbohydrates. The peoples of tropical Mesoamerica, Africa, and India have accessed fats from nuts, plants, ducks, insects, and turkeys, and they have depended on many vegetables, fruits, and grains endemic to their regions. Weston Price, during his global travels in traditional societies, asked the question: Who is the healthiest among peoples on the planet? While looking for an answer, he found that they all consumed moderate amounts of saturated and monounsaturated animal fats, suggesting that our modern fears of saturated fats are among the paradigmatic myths of modern medicine. He and other researchers also failed to find any society that was *vegan*, suggesting that veganism is a modern dietary invention. While there is much environmental, emotional, and spiritual merit in vegan practice, there is little evidence for any long-term biological merit.

Traditional diets vary widely; for example, the authentic Inuit diet may include up to 75% dietary fat, much of it saturated and anti-inflammatory, whereas an Indian diet might include nutrients from larger amounts of plant proteins—nuts and legumes—cooked in anti-inflammatory-rich spices like turmeric, cinnamon, and ginger. Yet as the SAD diet has traveled the world, even peoples eating traditional foods in India and China are subject to increasing depression, type 2 diabetes, and dementia. Authentic foods are those foods and medicines that naturally evolved over time within a specific human locale and culture. These foods bring balance to the body, mind, and

spirit. How does one integrate authentic foods, traditional foods, and whole foods today while living in rural or urban settings? What are the options and ideas for using food as a delicious source of nutrition and medicine?

As a general rule, we all benefit when the majority of daily food intake includes whole foods that are nutrient dense and freshly prepared. Some proportion of daily food should include both raw and cooked foods, and ideally some wild foods. Food that is obtained from cans or other packages should be minimized, though frozen foods can be a good option. Many foods are best eaten with minimal processing to ensure maximum nutrition and health benefits, while some require cooking, especially long cooking at low heat. The enzymes required for natural health and proper digestion are found in many raw foods. For others, slow cooking in water, boiling, salting, broiling, pickling, roasting, baking, drying, steaming, fermenting, and some smoking are essential processing methods that ensure maximum nutrition. Frying should be limited to special occasions. By preparing fresh foods, one can control the preparation, including the amount of salt and commercial fats used, to maintain optimal nutritional value. Fresh foods are also free of harmful preservatives.

One of the most important elements to successful mental health nutrition is that there is no one diet for everyone, hence the ancient adage often paraphrased as “One person’s meat is another’s poison.” For nutrition to be effective, diet must be tailored to the metabolism of each individual. Nutritional needs are determined biochemically at the individual level. This is genetically based and is culturally and environmentally linked to our ancestry. Aligning our “fuel” with the rate at which we can burn it enhances efficiency and performance. A consistent use of fuel inappropriate for the individual body leads to decline.

Eating according to your individual type means identifying what kind of body you have and how it digests and metabolizes food, or “fuel.” The rate at which you digest carbohydrates, called the “rate of glucose oxidation,” governs the amount of carbohydrates, proteins, and fats your body requires for your “fuel mixture.” Our bodies are strongly influenced by our genetic heritage, which developed in the environment and cultures where our ancestors evolved. Just because your people moved out from Africa 400 years ago doesn’t mean that your metabolism is that much different from your ancestors’. If your ancestors migrated from England to the United States 200 years ago, it doesn’t mean that you can now function as a

vegetarian. We carry the history of our ancestors and, in particular, our parents in our genes, and this influences our metabolism. If your people are from Greece and thrived on a Mediterranean diet rich in plant proteins and you have children with an individual from Greenland, your child will have a dominant metabolism and may need to eat either like someone from Greece or like someone from Greenland, or perhaps will be able to enjoy a mixture.

Individualized Nutrition

One of the ways I inform my clients about an individualized approach to diet and nutrition is to use the metaphor of a car. Different types of vehicles require different kinds of gas. For example, if I put 87-octane fuel into a car that takes only diesel, I can destroy the engine. Some cars do better with lower octane and some higher octane; the right fuel ensures the smooth running of the vehicle. This does not always mean that a vehicle will not run, more that it will not run optimally in the way it is meant to function. This concept is analogous to our own "engine." Each of us has an engine that requires a different mix of fuel, in the form of protein, carbohydrates, and fats. The correct fuel mix, meaning the correct ratio of these ingredients for the individual, will ensure smooth, healthy functioning. This concept, which is based in science, thus puts to rest all the confusion about the various diets that are out there and also the confusion about research on diets, all of which can show both positive effects and negative effects. It is not the diet that determines well-being but the individual's *alignment* with the dietary fuel. Hence, there is no one right diet for everyone. If we continue this analogy of cars and fuel, the combustion that moves us forward, with food, is called "oxidation," the rate at which we burn carbohydrates, or glucose. Some of us burn carbohydrates more quickly, and some burn them more slowly. To begin identifying your nutritional type, you may carry out either or both tests in Box 1.1.

Most clients are unfamiliar with the sciences of nutrition and of physiology, so I continue the use of the metaphor of the car to explain what is happening to their body/mind: Daily, one has to ensure the engine (the brain-gut) has the proper fuel mix (carbohydrates, proteins, and fats). If it is too low in octane, there's backfiring (fermentation and gas). If it is too high, it goes unused and is a waste, leaving waste deposits (gout). At periodic intervals one has to change the oil filter (flush the gallbladder), tune the

engine (take a rest), do a lube (ingest fish oils and hydrate), and of course wash the car (detoxify). Simple images, but often our clients are dissociated from their bodies—that is, separated from its functions and actions—and can better understand anatomical and physiological mechanisms through metaphor. When I ask a client the last time they flushed their gallbladder, and they never have, or suggest there is not enough fire in the stomach to digest their food (spark the engine), it becomes clear that often people take care of their cars more than their bodies.

A car may perform well when it is new (young), but as it reaches the 50,000-mile mark (4–5 years) it begins to break down—if it hasn't already. The clutch goes, the brakes give out, and under extreme stress, such as cold and wet winters, the bottom rusts out (adrenal foundation) and the paint (skin) cracks.

People can be divided into three general body categories: the *fast oxidizers*, whose blood pH tends toward a little more acid and are carnivores and eat higher fat; the *slow oxidizers*, whose blood pH tends to be more alkaline and do better on more plant proteins; and the *mixed or balanced individuals* who do well with a mix of carbohydrates, animal and plant proteins, and fats. What foods/fuel mix we require is determined by our genetics, just like the color of our eyes, our height, or our blood type. We are a product of our parents' rates of oxidation, also called "metabolism." If we are eating food that does not burn efficiently based on the need of our engine, then we will not function optimally, and this underlies not only physical but also mental health problems/illness.

Box 1.1
Identifying Your Nutritional Type

Niacin Test: Take 50 mg niacin on an empty stomach. Niacin has little or no effect on a slow oxidizer, mild effect on the mixed or balanced oxidizer, and a strong flush on the fast oxidizer.

Vitamin C Test: Take 8 g Vitamin C over an 8-hour period (1,000 mg every hour). The fast oxidizer will not feel good, the slow oxidizer will have little or no response, and the balanced oxidizer will not have much of a response at all.

Types of Oxidizers

What kinds of food support the fast oxidizer? These individuals do well with a high-protein, high-fat diet to slow down their rate of oxidation and to stabilize their blood sugar. They will often also do well on purine-rich foods, such as organ meats, sardines, anchovies, and asparagus. People who express that they are ravenous upon awakening, never feel sated regardless of what they eat, crave sugar, and frequently have had significant emotional and physical distress in their lives are fast metabolizers. They benefit from 30% of purine foods in their diet (and they will not get gout). More often than not, they have not been getting the foods their body needs, and within weeks, they begin to feel better with the correct diet. Their ideal ratio is 35% protein, 25% carbohydrates, and 40% fats. They will benefit from fruits and vegetables more so than grains. Slow oxidizers, in contrast, do best with 30% protein, 50% carbohydrates, and 20% fats. They will do best on lean animal protein like chicken, turkey, pork, fish, and eggs, and plant proteins. The balanced/mixed oxidizers will burn efficiently using 35% protein, 35% carbohydrates, and 30% fats. No one does well on refined sugar and refined wheat flour (though when one eats well 90% of the time, an occasional “refined” food will not be harmful). Table 1.1 reviews the nutritional types, and food ratios are discussed further in Chapter 5.

TABLE 1.1
Nutritional Types: Ideal Percentages of Food Intake

Type	Protein	Carbohydrates	Fat
Fast oxidizer	35%	25%	40%
Slow oxidizer	30%	50%	20%
Mixed oxidizer	35%	35%	30%

Thus, the fast metabolizer is what we would call a carnivore, the slow metabolizer would be on the vegetarian spectrum, and the mixed would benefit from a range of foods. Keep in mind that we are talking about a spectrum. Later, when we explore using the Korn Food/Mood Diary, one of our basic principles is asking our clients what makes them feel best and what makes them feel worse, and this applies to diet as well as behavior. People’s needs also change due to illness, stress, exercise, and age.

A diet that is rich in plant proteins, fruits, nuts, seeds, legumes, and grains provides a superior foundation for mental health nutrition and will benefit nearly everyone. Nuts and seeds, especially nut butters, and seeds and grasses like buckwheat and millet are good sources of protein, along with well-soaked and well-cooked legumes. Depending on one's individual biochemistry, one can continue as a vegetarian or will benefit from adding fish (pescatarian), eggs and milk (ovo-lacto-vegetarian), and various forms of poultry and meats. The key to a successful plant-based diet is ensuring a diversity of proteins to provide the complement of amino acids necessary for neurotransmitter function.

People who are depressed, lethargic, anxious, or prone to panic and also following a vegetarian or vegan diet will most likely improve by including animal proteins into their meals. In these cases it is common that the individual is not aligned with their true dietary needs and their blood pH has become too alkaline. It is often in these cases that an individual is a vegetarian for spiritual, emotional, or environmental reasons but genetically is not a true vegetarian. Indeed, I have had many vegetarian clients who were actually fast metabolizers and did well on a purine-rich animal protein diet. If the depressed vegetarian is willing, I ask them to eat animal protein two or three times daily for 7 days and then assess changes in mood.

Measuring Metabolism: Lumen

The Lumen device measures *metabolic flexibility*, the ability of the human body to switch back and forth between fat and carbohydrates based on their availability. It is a small, handheld device that measures in real time percent expired carbon dioxide ($\%CO_2$) and flow rate after a breath hold. Lumen can guide choices of ratios of carbohydrates, fats, and proteins in a given day (Lorenz et al., 2021; Roberts et al., 2023).

Good Food Improves Mood

Mood follows food, and mood swings follow blood sugar swings. Refined carbohydrates, such as sugar and white flour, cause blood sugar to rise sharply and then drop, hence the quick pick-me-up when we grab sugar followed by the just-as-quick letdown within an hour or two as glucose levels drop and fatigue and irritability return. This leads to reactive hypoglycemia. The first two dietary steps that are required to help clients

with low mood or mood lability is to decrease and eliminate refined carbohydrates and sugars from their diet while increasing the intake of quality protein. People addicted to sugar often experience withdrawal symptoms when they eliminate sugar and refined carbohydrates.

People under chronic stress are vulnerable to reactive hypoglycemia, which occurs in response to an excessive release of insulin following a high-refined-carbohydrate meal. Chronic stress always underlies depression. Primary hypoglycemia can occur with an inadequate supply of carbohydrates. High or low blood glucose levels affect mental functioning. A drop in blood glucose leads to a drop in mood, irritability, anxiety, nervousness, craving of sweets, panic, crying, fainting, motor weakness, personality changes, headaches, visual disturbances, confusion, and shakiness. Some of the symptoms that are mistaken for mental health symptoms are anxiety, worry, inability to focus, irritability, restlessness, insomnia, temper tantrums, hyperactivity, and depression. Problems associated with hypoglycemia also include foggy thinking because the brain is not receiving as much glucose as it needs to function properly.

The hormone cortisol is responsible for raising blood sugar levels, but under chronic stress cortisol is often low and cannot raise those levels, resulting in the symptoms of irritability, shakiness, dizziness, or feeling like rubber. The time it takes for these symptoms to occur is usually two to five hours after eating. In addition to high-carbohydrate meals, smoking cigarettes will increase severe hypoglycemia. Insulin resistance, which often is the precursor to type 2 diabetes, co-occurs with functional hypoglycemia. Insulin resistance is associated with depression (Zou et al., 2020), and people who are insulin resistant feel sleepy after they eat because excess insulin promotes excess serotonin in the brain. This also explains why people eat high-sugar foods or starchy carbohydrates to calm down. Daily carbohydrate intake can range from 50–100 grams for a keto or low-carb diet to 400 grams for a long-distance runner. Most people do well with a range of 100–250 grams per day.

When assessing mood changes and inattention in both children and adults, it is important to rule out reactive hypoglycemia, food allergies, or other medical conditions. Many children with apparent attention problems who regularly go off to school with sugary cereals and milk for breakfast would have more sustained and focused energy simply by eating more protein and fat for breakfast. Research demonstrates a significant

relationship between junk food, unhealthy diet, and poor mental health in children and adolescents (Malmir et al., 2023). Reactive hypoglycemia is often misidentified as the rapid cycling of bipolar disorder or attention-deficit/hyperactivity disorder (ADHD). Without eliminating hypoglycemia as a cause of mood cycling, an accurate diagnosis cannot be made. Children and adults with severe mood swings and irritability experience significant improvement when the hypoglycemia and carbohydrate addiction are addressed. I recommend always evaluating (and changing) a child's diet prior to or during the initial stages of mental health treatment. Combined with exercise, the arts, and behavioral/emotional support, changing the diet provides an alternative to ADHD medications. Hypoglycemia is almost always apparent in cases of alcoholism, because sugar, as alcohol, is also being consumed in high quantities. Hypoglycemia is commonly seen in people with schizophrenia, drug and food addictions, or obesity. Many people who suffer from hypoglycemia are also deficient in essential fatty acids. Symptoms include dry skin, dry hair, adrenal insufficiency, and poor functioning of the pancreas, liver, and gallbladder.

Without reducing the intake of refined carbohydrates such as sugar, balancing mood will remain out of reach for those with mood disorders. Most patients who do not eat a healthy diet and binge on carbohydrates have hypoglycemia and do not know it. Many vegetarians experience it, since they often do not consume enough protein to stabilize their blood sugar. People who fall asleep but awaken three or four hours later and cannot get back to sleep may also experience nighttime hypoglycemia and will feel better when eating some protein and carbohydrates just before going to bed.

A diet that is low in carbohydrates with a moderate protein intake and plenty of fats is beneficial for those with insulin or leptin resistance, but only until the resistance improves and weight, blood pressure, sugar, and cholesterol have normalized. Carbohydrates can be increased in the diet once this improvement is seen but should emphasize root vegetables, fruits, and (limited) whole grains. Carbohydrates can then be adjusted as needed if symptoms return. Even though glucose is a major fuel for the brain, low-carbohydrate diets have not been found to affect cognitive function negatively, and ketogenic based diets appear to support cognitive function for many, though not all (Altayyar et al., 2022).

In general, everyone functions best by eating three to six meals a day, including snacks, and everyone would benefit by eliminating refined carbohydrate consumption and combining vegetable carbohydrates with healthy, high-quality fats like butter, avocado, coconut, nuts, and eggs. Eating organic starchy and nonstarchy vegetables as the primary source of carbohydrates is optimal. Eating small amounts of high-quality protein, fat, and vegetables every three hours is an essential dietary approach to recovery from hypoglycemia (see Appendix A for Guidelines for a Hypoglycemic Diet).

Digestion and Mental Health

The intestinal tract, or the gut, is often called the "second brain" because it is a major source of neurotransmitter production in the body. Thus, it is not surprising that people with chronic digestive problems are often anxious and depressed. The healthy bacteria, known as probiotics, help lower the stress response by regulating GABA, the relaxation neurotransmitter, via the vagus nerve. Probiotics may be bought in capsule or liquid form in a health food store and are also found in fermented foods.

Fermented foods are among the best foods for both intestinal and brain health. All traditional diets have some form of fermented foods. The health benefits of yogurt and kefir, among other fermented foods, derive from their beneficial bacteria. Fermented foods' value is well known in traditional cultures everywhere, as they are used to restore and maintain the bowel "garden," where the bacterial flora grow. Where fermented foods are not available, yogurt and sauerkraut can be made at home easily and inexpensively and are a wonderful food preparation and "science experiment" to share with children. Another common practice of our ancestors involves making gelatin-rich bone broths that contain collagen and amino acids that are easy to assimilate and help brain function. Freshly made bone and vegetable broth is the first food to choose as a staple in helping people recover from mental illness. Yet many people no longer cook or prepare foods, relying instead on packages, microwaves, and fast foods. Among the initial steps to explore with clients is how to integrate food preparation, both raw and cooked, into their lives.

When discussing diet and nutrition, I use the Korn Food/Mood Diary (see Appendix B), which asks clients to keep detailed track, for three days,

of what they eat and how they feel. This diary is a valuable tool for revealing clients' self-care routines—or lack of them—and can greatly enhance their awareness of what they eat and how it affects energy and mood. How the conversation begins, recognizing that mood is a mind–body experience and not just based on personal history or mental processes, can be crucial in increasing clients' sense of self-efficacy and broadening their perspective on the many pathways to change.

I have organized this book with attention to what I consider the most important diet essentials. It is not an exhaustive list; however, employing these essentials will help clients on their path of recovery.

Diet Essentials

1. *Mood follows food—eat breakfast.* Do not allow yourself to become hungry. Eliminate refined carbohydrates. When your blood sugar drops, so does your mood. Eating protein stabilizes your mood. Eating only carbohydrates allows you to feel energized at first, and then relaxation or even fatigue may set in. Eating fats provides a sense of satiety. Intermittent fasting, or breakfast postponement, can be undertaken once blood glucose is managed.
2. *Prepare fresh foods daily.* Preparing fresh food is an act of self-nourishment. It brings nutrients, satisfaction, and pleasure to the body and mind, as well as ritual, alone and with others, that engages attachment, connection, and spirituality.
3. *Nourish both the first and the second brain.* The brain is made up of 60% fat. It needs enough good-quality fat, proteins, and carbohydrates (glucose) to function. To improve mood, focus, attention, and memory, eat plenty of good fats like butter, eggs, avocados, walnuts, and coconut oil, and eliminate all poor-quality fats and trans fats, like French fries and partially hydrogenated oils added to canned and packaged foods. The "second brain" is the digestive system, the "gut" where food is digested and absorbed. Nourish the second brain with fiber and fermented foods to feed the healthy bacteria and neurotransmitters that support efficient brain chemistry.
4. *Eat only when relaxed.* Digestion occurs when the parasympathetic nervous system is switched on. The juices containing digestive enzymes flow in a state of relaxation. Eating under stress is like putting a pot of food on the stove to cook, not lighting the fire, and

letting it sit there for two days; it bubbles, ferments, and becomes gaseous.

5. *Where there is mental illness, there is always a history of digestive problems.* Use nutrition to balance the five essential factors that underlie mental illness: circadian rhythms, blood sugar, and functional hypoglycemia; food allergies and sensitivities; inflammation; oxidative stress and mitochondrial function; and imbalanced methylation.
6. *Symptoms tell a story of nutritional and emotional challenges.* Our role is to listen to the story and, together with the client, make the story coherent and actionable.
7. *Mental illness is affected significantly by diet and exposure to food toxins and allergies.* Mental health and the microbiome are affected negatively by dietary exposure to food toxins and allergens (Warner, 2024). Use wild and organic foods. If you cannot obtain these foods all the time, focus on organic eggs and animal and plant proteins, and detoxify your fruits and vegetables.
8. *There is no one right diet for everyone.* Each person has a different cultural-genetic heritage and therefore a different metabolism. Some peoples like the Inuit require mostly fats and animal protein, whereas people indigenous to India may do well on a predominance of legumes, vegetables, fruits, and grains. Most people thrive on a variety of foods, but that mix of food can vary greatly. Know your ancestry and genetic heritage, and try to eat for your individual metabolic type.
9. *Eat all the colors of the "brainbow."* Eat whole, nutrient-dense foods from the color spectrum to obtain your nutrients. Prepare fresh foods daily.
10. *Diet is essential but not sufficient.* A healthy diet is essential for mental health; however, it is not sufficient to treat mental illness. It is also essential to include regular use of vitamins, minerals, fats, and glandulars.
11. *Choose healthy foods and nutrients over alcohol and drugs to alter consciousness.* Foods and nutrients, alcohol, and drugs can all alter consciousness. Distinguish between altering consciousness for health or for addiction. Understand what is being altered in order to gain

control over an addiction. Transform addiction into positive states of consciousness, linked to ritual, ceremony, and group activities.

12. *Integrate behavioral change strategies with the principle of nutritional substitutions.* Personal change takes place by integrating positive activities (habits) first and then eliminating negative habits (activities). Identify one positive change behavior and its corresponding negative habit at a time. Substitute healthier foods that will satisfy what the brain needs.

Body Appreciation, Body Positivity, and Health at Every Size

One critical question faced by clinicians seeking to integrate nutritional principles into mental healthcare is whether this approach risks promoting food restriction and dieting. Will the assignment of "values" to specific foods (e.g., sugar is bad, apples are good) be conflated with hidden or overt messages to lose weight, leading to shame and exacerbation of preexisting maladaptive conditions and reinforce the oppression of size culture on women and men? These questions may apply to everyone but are particularly significant when working with individuals with body dysmorphia and eating disorders.

The purpose of applying nutrition to mental health is to understand its impact on individual mental well-being and to consider food access within personal and social contexts. This approach aims to identify the role of nutrition in mental health; explore the relationships among different food types, quality, and behaviors; and assess their effects on mental well-being. There should be no focus on losing or gaining weight or changing body appearance. Instead, the focus should be on identifying foods and self-nourishment behaviors that promote mental well-being, distinguishing them from those that do not.

This process begins with the same types of self-awareness and self-discovery we explore in any therapeutic encounter. However, this also causes the clinician to be aware of their inner bias and aim to communicate in a sensitive, nonjudgmental manner (Matz, 2014), particularly when working with clients who have body image concerns, body dysmorphia, eating disorders, and low body appreciation. As I discuss later, this work

begins with self-awareness and psychoeducation and seeks options to link how we fuel our bodies and how that supports the brain and mind.

These concerns intersect concepts of body appreciation, body positivity, and health at every size. *Body appreciation* is defined as accepting, holding favorable attitudes toward, and respecting the body. It is associated with better psychological well-being, less depression and anxiety, better dietary habits, and more motivation to exercise (Linardon et al., 2022). Body appreciation is fairly stable across cultures, though generally higher among men. On the other hand, *body positivity* advocates for more inclusive acceptance and representation of all types of bodies. It is a social justice movement that is often reflected in social media and has also been criticized for being white and cisgender-centric. Body positivity has its roots in the fat acceptance movement. Health at Every Size is a public health movement that emphasizes all bodies have the right to seek health, regardless of size, without bias, and aims to reduce stigma toward people who are in larger bodies (Penney & Kirk, 2015).

What to Know About Ozempic and Its Alternatives

Even as we counsel on eating for mental wellness and body positivity, there are many reasons that clients will inquire about the use of GLP-1 therapies to address type 2 diabetes or to lose weight. Incretin-based therapies, known as semaglutide, tirzepetide, and retatrutide, enhance the action of *incretins*, gut hormones that regulate insulin secretion after eating. The two main incretins are GLP-1 (glucagon-like peptide-1) and GIPs (glucose-dependent insulinotropic polypeptides). These hormones help control blood glucose by stimulating insulin secretion, suppressing glucagon secretion, and slowing gastric emptying, which helps reduce appetite. These medications help manage type 2 diabetes; many clients use these medications to lose weight. Their side effects can include gallstones, nausea, and bloating. The most critical side effects are malnutrition and muscle loss from reduced food intake (often 500 calories a day) over long periods of time. As clinicians, we can help clients explore their options and decide if they want to use these medications, which are expensive and off-label for those without type 2 diabetes or a high BMI. We may also suggest options that include nature’s incretin enhancers. Fiber and fermented foods are natural GLP-1 agonists. Bitter foods (Arjmand et al., 2022), including Himalayan tartary buckwheat and bitter melon (*Mormordica charantia*, called *cundeamor* in Mexico), are

also natural GLP-1 agonists. Berberine, curcumin, cinnamon, and resveratrol are all GLP-1 agonists. In my clinical experience, berberine is the most effective. Medicinal plants containing berberine include barberry, Oregon grape root, guduchi (*Tinospora cordifolia*), and goldenseal. Indigenous peoples have long used berberine-rich plants for their anti-inflammatory, antioxidant, and hypoglycemic effects (Neag et al., 2018). Research has shown that supplementation with berberine reduces blood glucose and contributes to weight loss (Z. Li et al., 2023; Ye et al., 2021). The appropriate dose ranges from 500 mg/t.i.d. up to 2,000 mg/d. Like with all herbs, conduct a drug-herb-nutrient interaction analysis to assess potential interactions and dose adjustments.

A natural GLP-1 protocol would be rich in dietary and supplemental fibers and polyphenols derived from plants and fruits, emphasizing bitter greens (Arjmand et al., 2022), tartary buckwheat, berberine (1,500–2,000 mg/d) in divided doses, and chromium picolinate (400 mcg/b.i.d. alone, or in a compound like Glucothera™ Forté, which contains fiber, chromium, and herbs to manage glucose).

Nutritional Questions and Concerns Clients Bring to Us and How We Can Respond

Our clients bring a range of questions and concerns about their physical and mental well-being. Many clients want advice and support to either improve the efficacy of their medications, reduce the dosage, or eliminate or stay off medications. Among the questions my clients have presented are the following:

Q. My primary care provider has suggested that I take medication because I am depressed, but I would prefer not to. Are there any nutritional alternatives that I could consider?

A. Commonly a client with depression, anxiety, or insomnia has been advised to take medication, and for any number of reasons they do not want to. They may not want to because they don’t believe in medications, they may be afraid of them, they have tried them in the past with negative side effects, or they may have cultural, religious, or philosophical reasons why. Our first response is to understand what they would like to do to address their

symptoms and what their fears and concerns are about medication. My goal is to prioritize nonpharmaceutical approaches to addressing symptoms, and my first response is to instill hope to manage these symptoms and even eliminate them when combining psychology and nutrition. Throughout this book we explore, step by step, both initial and more complex considerations that are isomorphic to our clients' personalities and their stated needs.

Q. The school sent a letter saying that they strongly encourage us to get a consultation for medication for our 8-year-old, whom they suggest has ADHD. We would rather explore other options at this point. Can you tell me what they are and how to begin a nutritional program?

A. Parents of children with focus and attention symptoms are commonly advised by the school system that their child needs medication. In this type of consultation we have an opportunity to explore dietary influences on behavior, the research on nutritional supplementation, and self-care behaviors and exercise routines. This will also intersect with our clinical expertise on learning styles and family stressors that may contribute to oppositional or hyperactive behavior (which may also be misdiagnosed or require reframing) as part of a comprehensive treatment approach. Above all, my goal is to instill in parents the hope and belief that their child can come into balance without the use of medications.

Q. I have been taking antidepressant and antianxiety medication for 12 years. I want to stop using these medications, but every time I stop I feel worse. Can you help me?

A. Often we work with people who are already on medication and want to stop the medications, and they want to know if nutrition can help them do that. No matter where a client is on their journey toward health, they will benefit from education about the role of food and dietary behaviors in mental health. For example, I might begin a discussion about the role of refined foods and their effect on mood, or the benefits of protein on neurotransmitter synthesis. As I am exploring some basic concepts about alternatives to medication, I can begin to discuss the self-care that is required to taper medication, and again, I can encourage them

that many thousands of people have successfully withdrawn from and stay off medication.

Q. I have been eager to stop taking my medication, and I started taking some nutritional supplements and herbs that my friend told me worked the same way. Do you know about St. John's wort and 5-HTP (5-hydroxytryptophan) and tryptophan?

A. Clients may reveal that they are combining a variety of prescription and nonprescription medications that may have harmful drug-nutrient-herbal interactions. They may also share what may appear to be radical dietary practices. Reviewing specifically what they are taking and exploring these interactions, as well as identifying what practices they are adhering to and why, sets the stage for informed decision-making and improved efficacy. It also prevents unintended side effects.

Q. I have been through several rounds of CBT treatment for my eating disorder and while it has helped, I still find myself craving certain foods. And if I don't eat that food I just end up hurting myself in another way. Do you think there may be certain foods that I am "allergic" to or addicted to that are making my disorder worse?

A. Clients in recovery from eating disorders and body dysmorphia may also have a history of self-harming behaviors and traumatic stress. Craving foods may be driven by allergies or intolerances. All symptoms should be explored for cause.

Q. I am under a lot of stress at work, and I am still 10 years away from retirement. I just don't have the mental focus, and my memory seems to be failing me. I have been trying different nutrients I read about on the internet, but I am not sure if they are working. What do you think would work best?

A. Increasingly, we are providing support to people with cognitive decline who are interested in staving off the negative effects of aging. They may ask about whether the research they have been reading on the internet about *Gingko biloba* and turmeric is reliable. This provides an opportunity to explore their concerns. It may also lead to a referral for neuropsychological testing. It provides the therapist with an opportunity to share

evidence-based research on nutritional prevention and treatment of cognitive decline.

Q. I am feeling a lot of pressure from my spouse to lose weight. But honestly I feel fine, and I exercise several times a week, and my blood tests look good. I am wondering what you think about my assessment, and if we might plan on a couples session to educate my spouse?

A. Many people are concerned with weight loss, especially if we work in the fields of behavioral medicine, hypnotherapy, and fitness. Likewise, clinicians can be susceptible to the belief system that extra body fat is unhealthy. Friends, partners, and coworkers may also put pressure on our clients to lose weight or collude with them around unrealistic weight loss goals. However, there is growing evidence that having some excess body fat is actually healthier than a deficit of body fat. Exploring a client's concerns about weight provides an opportunity to understand the meaning of their body weight, their sense of well-being, and their current nutritional habits, and it allows us to work with them to craft an overall wellness approach that focuses on conditioning and well-being rather than numbers on a scale. This may also lead to family and couples work on these issues and can become a family nutritional wellness plan that honors each individual's unique needs. However, a discussion of body weight or fat may also lead us to work with providers to conduct lab tests on thyroid or other hormone levels, address menopause or andropause, and further understand the intersection of physical well-being and mental health.

Unless you have identified with a specialty niche practice in mental health nutrition, clients may not discuss their questions without prompting. This is the value of the assessment process we explore in Chapter 3. In these cases, we may raise questions about nutrition as we work with a client to increase awareness about the connection between good nutrition and mental health. As I explore throughout this book, there are complex interrelationships between mental and physical health; indeed, it would be difficult to identify any mental health illness that did not have a physical symptom associated with it. Thus, we are on the front line of educating our clients and helping

them understand those relationships. Yet understanding the relationships between nutrition and mental health is only part of the process; enacting change behaviors through self-care is the other necessary component.

Our clients often have chronic illnesses and seek help for depression or grief associated with functional illness. For example, depression resulting from chronic pain, traumatic brain injury, or diabetes is common, and clients may experience problems with self-care. Often these clients have a difficult time with self-care because they feel they are being deprived of pleasures associated with food. Our work in nutrition and psychology can support these clients to reframe their illness and also help them find pleasure in new food choices. John's story (Box 1.2) is emblematic of the role nutrition plays in our clients' health.

Box 1.2

John's Story: How Nutrition Improved John's Mental Health

John was 38 years old, recently divorced, and living alone. He arrived at therapy saying that he was always tired and moody. He had been diagnosed with ADHD since childhood and, more recently, bipolar disorder. He drank a lot of sodas, and sometimes he would not eat in the morning, or sometimes he just ate a donut with his coffee and creamer. He often grabbed a processed meat sandwich and French fries for lunch. He was taking three medications for blood pressure, cholesterol, and depression, and he used benzodiazepines to sleep. He worked as a supervisor and found himself increasingly snapping at his employees. He had the beginnings of a potbelly, his blood glucose levels were borderline high, and he was drinking beers at night to relax, though he often woke in the middle of the night if he did not medicate ahead of time. He expressed concern that he was using alcohol to self-medicate. He said he was always hungry and did not feel satisfied no matter what he was eating.

Together we reviewed John's dietary habits step by step and prioritized the kinds of foods he liked and disliked. We did a comprehensive medication history, symptom history, and a Food/Mood Diary. John was able to identify the same times of day that his mood and energy lowered, and these were also the times he became irritated at work. I identified hypoglycemia as a contributing factor to his mood lability. His chronic stress both at work or, more recently, due to his divorce, and the years leading up to it, had depleted his energy and taxed his adrenal function, which regulates glucose metabolism. He was using both stimulants and sedatives.

He started taking B vitamins, chromium picolinate, and fish oil. I suggested that he have one glass of red wine at night but earlier in the evening, with his meal. John's diet had deteriorated since his divorce due to stress, and he had never before been responsible for preparing his own food. I educated him about the basic connections between food and mood and suggested that a change in his diet would also help his focus and attention. John's diary illuminated for him the patterns of his food and mood relationship. We began by identifying three positive changes he could institute in his diet and behaviors, and three

behaviors or foods he would relinquish. He really liked bacon and eggs, and steaks, and thought he should not eat them due to his cholesterol levels. But I assured him he would benefit from eating those foods daily if he liked. And I proposed a four-week plan after which we would assess his diet options. He agreed to include one fresh salad from a salad bar (but not use the salad bar dressings) and one piece of fruit daily and to begin cooking for himself by obtaining a slow cooker (e.g., Crock-Pot®) to prepare meat and potatoes. He agreed over the next month to eliminate the donuts. I also suggested that he take a B-complex Vitamin along with minerals. Fish oil would help his blood pressure and cholesterol and help him focus, and supplemental taurine and magnesium would help lower his tension and blood pressure and help him sleep. If he chose to drink one beer (instead of red wine), it would be a dark one, made with either hops or oats because it was richer in minerals.

John was able to concentrate and became more focused. Once he was less depressed, he felt more motivated to get a little exercise to increase his stress management. By the end of the first week he began to feel more stable emotionally, had more energy, and was more satisfied with his diet. He was able to stop eating donuts but still was drinking more coffee. John also began taking nutrients and by week 2 felt more hopeful and in control. He was choosing some new restaurants, where he ate salad and proteins and whole grains, and began inviting people to join him for some meals. By the end of the first month he was making a stew once a week at home. He eliminated sugar and reduced his coffee to two cups a day and he began to feel more stable. When he came in 3 months later he had dropped 10 pounds, was feeling much better and sleeping better, had begun dating, and said he now wanted to begin to reduce his medications.

Integrating Nutritional Therapies Into Your Psychotherapy and Counseling Practice

Improving nutritional status enhances mental health outcomes and can be seamlessly integrated into therapeutic approaches, such as posttrauma therapy, cognitive-behavioral therapy (CBT), dialectical-behavioral therapy (DBT), feminist therapy, relational-cultural approaches, somatic therapies, and polyvagal therapies. These modalities naturally support the integration of nutrition by exploring the role of self-care and identifying obstacles to enactment while fostering the capacity for emotional regulation and self-agency. Addressing nutritional status alongside these therapeutic approaches provides a robust, holistic framework to support emotional and mental well-being.

Most individuals seeking counseling present with mood disorders, often accompanied by a history of traumatic experiences and at least one adverse childhood event (Han et al., 2021; Saunders et al., 2023; Sucich et al., 2023). In any therapeutic approach with clients, the overarching goal is to alleviate suffering, reduce symptoms, establish connections with others, and help clients understand how their narratives influence their mental,

emotional, and physical functioning. These methods are a gateway to shift maladaptive behaviors, enhance well-being, and gain greater control over one's life. Throughout the following chapters I identify specific ways our psychotherapeutic methods work well when adding a specific nutritional component. Box 1.3 shares how I integrate nutritional therapies into my practice, and Box 1.4 provides other examples.

Box 1.3
My Clinical Practice

I specialize in the integration of psychotherapy and nutritional therapy for the treatment of complex trauma and PTSD. I focus on how traumatic experiences influence mood, emotional regulation, and biological processes. I also treat the traumatic sequelae of depression, anxiety, panic, insomnia, disruptions in self-regulation and interpersonal relationships and the concurrent physical problems, digestive disorders, chronic pain, traumatic brain injury, eating disorders, and substance use disorders. I also work with clients to provide alternatives to pharmaceuticals and help them taper successfully. I work with clients to identify obstacles to self-care, develop strategies to overcome these challenges, and explore how self-care enhances their overall well-being. My approach integrates nutrition with mind-body practices that balance the autonomic nervous system, emphasizing a feminist, trauma-informed, somatic therapy framework that is body positive and culturally savvy. The lens of mental health nutrition is central to posttrauma recovery, providing a foundational framework for healing. Throughout this book, I explore how to incorporate nutrition for different diagnoses, symptoms, and stages of recovery. I incorporate mindfulness techniques and, when appropriate, CBT-style motivational interviewing to support clients in achieving their therapeutic goals. I have found that eye movement desensitization and reprocessing (EMDR) is often appropriate during the early stages of recovery, and I draw on psychodynamic models emphasizing the therapeutic relationship as central to healing. My aim is to create a relational space where clients can explore trusting, again, and address sources of shame and self-harm. While maintaining appropriate boundaries, as therapists, I believe in being a role model for self-care. I may do walking therapy with clients to help jump-start their movement program and demonstrate exercises, or invite them to join a mind-body group that includes nutritional psychoeducation and learning how to make simple meals.

Ultimately, the goal is to help clients reframe the narratives that drive harmful behaviors and replace them with new options for achieving resilience and recovery. Where psychotherapeutic methods enhance psychological resilience, nutritional interventions support biological resilience, providing the "fuel" necessary to achieve lasting change.

Box 1.4
Lorna's Story: Integrating EMDR With Nutritional Therapies

Lorna sought therapy to address PTSD, depression, fatigue, chronic pain, insomnia, and prediabetes. Her coping mechanisms included overworking, overcaretaking, and overeating fast food. During our first month of work she made goals to set boundaries, take weekends off, walk more, eat out less, and cook healthier meals at home. While she made progress with boundaries, walking, and rest, she struggled to start cooking or change her diet.

Using motivational interviewing, we uncovered a significant traumatic event that made her feel unsafe in the kitchen. We paused her cooking goals and began EMDR therapy, including bilateral stimulation and at-home tapping, to desensitize the trauma and install a positive belief that she would feel safe and enjoy cooking. To address her dissociation, we focused on body scans and self-palpation exercises.

When ready, we introduced gradual exposure: she first joined a friend and cooked with her in the kitchen, and then she prepared a simple slow cooker meal in her own kitchen during a video session with me. We used 4–7–8 breathing to manage her anxiety (see Box 4.1). The following week she cooked with another friend, and the next week she made a smoothie during another video session with me. Lorna now feels comfortable in her kitchen and prepares homemade meals several times a week.

Scope of Practice, Laws, and Competency

When integrating nutritional therapy into your practice, you will want to answer three questions: (1) the *scope of practice* of your discipline and whether it prohibits or can include the integration of providing nutritional therapies. This also intersects with (2) *legal issues*: every state has different laws about the types of nutritional advice a professional or layperson can provide a client, and practice laws change often. The National Association of Nutrition Professionals (NANP) maintains an up-to-date database of state laws (https://nanp.org/legislative-affairs/; see also Appendix C). Finally, consider your level of (3) competency to provide different types of nutritional counseling and therapies. For example, to suggest that a client stop smoking, or eat healthy fats, or stop drinking too much coffee to reduce anxiety requires a basic level of competency. It requires a greater level of competency and confidence to suggest that a client use 300 mg magnesium along with 450 mg lactium (an anxiolytic milk protein) to decrease anxiety. In this scenario, one has a basic level of psychoeducation to impart to reduce anxiety. This step requires knowledge of state laws as well as competency to make recommendations for nutrient recommendations. Another level of knowledge and competency would be required if this same client has been on benzodiazepines for years and wants to withdraw and use alternatives to the medication.

Scope of Practice

Mental health practitioners can integrate nutritional therapy at three levels of practice: psychoeducational, collaborative, and autonomous.

Psychoeducation

The most basic and accessible level is where nutrition becomes a component of psychoeducation about wellness and self-care strategies. Much of what I talk about in this book falls within this area. Every clinician can feel competent in their ability to educate a client about the basic role of nutrition and the choices they make to improve mental health.

Nutrition as psychoeducation involves making linkages between how and what clients eat and drink and the effect on their mental wellness. The Korn Food/Mood Diary and Clinician Checklist (see Appendix B), described in depth in Chapter 3, can help you explore basic self-care patterns and provide simple change steps. A review of a client's diary might lead to exploring how much caffeine a client is drinking in relation to reports of anxiety and insomnia, or if your client is eating breakfast or three or more meals a day, or eating enough protein or good-quality fats. Exploring food addictions is also within the scope of psychoeducation behaviors, along with healthy recipes and engaging family in food gathering and preparation. It might also include educating a family about the role of nutrition in ADHD or integrating these self-care strategies into group therapy for survivors of sexual abuse. At this level, nutrition as psychoeducation includes coaching for success and setting the stage for a deeper exploration that may lead to a collaborative relationship with a nutritional, naturopathic, or functional medicine professional.

Collaboration

As we move along the spectrum of integrating nutritional therapies into mental health treatment, we may want to reach beyond our own qualifications to share more complex knowledge about the next steps clients can take. If we are not able to evaluate, recommend, or prescribe a practice or treatment, based on our state of residence, or if implementation is beyond our current level of competency, we can form a *collaborative relationship* with a more advanced nutritional professional or a professional licensed to design or prescribe the treatments and programs your clients need. For example, clients may want to stop their medication(s). We know nutrition's role: B vitamins, amino acids, and omega-3 fatty acids. Still, if we are not the prescriber, we will want to coordinate our dietary and nutrient

suggestions with the prescriber as we co-create a taper schedule and nutrient plan. Because prescribers are rarely trained in mental health nutrition, I will often send along research on the topic to jump-start the dialogue. Another scenario might involve a client who is depressed, has type 2 diabetes, and is taking several medications. We believe that they will benefit from taking fish oil and a nutrient mix containing magnesium and chromium picolinate. However, we also know that this nutrient mix will synergize the benefits of the client's medications and possibly lower blood sugar. Thus, we would coordinate and collaborate with the prescriber or another professional to discuss adjusting the dose of their medications.

Discover how Alice, a licensed mental health counselor with 15 years of experience using solution-focused therapy, DBT, and EMDR expanded her practice to include nutrition for mental health.

Box 1.5

Alice's Story: Advancing Her Psychotherapy Practice With Lifestyle Nutrition

Over the past year, Alice studied how lifestyle behaviors and dietary changes could help her adult clients with mood disorders. Alice has been coaching clients on improving mood through healthy habits, sharing recipes, and discussing the risks of sugar, artificial sweeteners, and trans fats. However, she felt less confident recommending specific supplements or extensive dietary changes.

To align her practice with her evolving interests, Alice added information about her use of lifestyle and nutritional therapies for mental health to her website and disclosure form, resulting in increased self-referrals and colleague referrals. She now includes the Korn Food/Mood Diary in intake sessions and dedicates a follow-up appointment to reviewing findings. Over time, as existing clients meet their goals and leave therapy, she has attracted new clients specifically seeking nutrition integrated into counseling.

Alice also started leading short-term groups for individuals transitioning from residential addiction treatment, many of whom have complex medical needs. Recognizing the limits of her knowledge, she partnered with a Certified Nutrition Specialist to co-lead these groups, which quickly developed a waiting list and led to a series of diverse community and hospital-based classes in a range of topics on nutrition for mental health in children and adults.

Autonomous Practice

The third scope of practice is as an autonomous mental health nutrition professional. This occurs when a combination of competency, credentials, and state laws allows the clinician to fully integrate nutritional therapies into mental health counseling. Engaging in the first two scopes of practice

may require additional training, certification, or licensure, or years of clinical experience may lead to this stage.

As an autonomous practitioner you will include all or most aspects of nutritional therapies, including assessment and evaluation, ordering and analysis of nutritional laboratory tests, program design including prescriptive plans for treatment and medication withdrawal, and coaching for success, all of which are detailed in this book. However, I always recommend engaging a prescriber when a client wants to taper; Chapter 8 explores this process.

Legal Issues

The practice of nutritional therapy in the United States is governed legally by each individual state. The Center for Nutrition Advocacy also maintains an up-to-date database on the legal right to practice nutrition in each state. Because this changes often, it is wise to explore the guidelines for each state.

As a general rule, the health professional has five basic licensure scenarios for practice (American Nutrition Association, 2024):

1. You are licensed as nutritionist/dietitian—you are a nutritionist and/or dietitian whose academic training, professional credential, and professional experience meet the law's specifications to be licensed in your state.
2. Your healthcare license includes nutrition—your profession is licensed in your state and your defined scope of practice includes language outlining the use of specific nutrition tools as part of your practice (e.g., dietary counseling, supplements, herbal therapy).
3. Your healthcare license is exempt from nutrition law—your profession is licensed in your state, and the nutrition law contains an exemption for "licensed health professionals" in general, or your profession specifically, to freely use nutrition tools or to use nutrition tools as an adjunct to your primary profession.
4. You are exempt from licensure—your profession or work in the community is not licensed but you are identified in the state nutrition law as being exempt from requiring a nutrition license to use some or all stated nutrition tools.

5. Nutrition care is not criminalized—the nutrition licensure law does not criminalize people who do not have the license but, rather, protects the use of the title Nutritionist or Dietitian, or there is no licensure law for nutrition in your state.

Competency

Competency occurs in relation to scope of practice and legal issues. Once you have determined the extent of practice allowed in your state, the next step is to explore your own competency. This book provides information that can be categorized into two broad areas. One comes under what we call "psychoeducation" or self-care education, which is basic nutrition and diet knowledge that anyone could share. The second category requires more knowledge and training, often involving the prescription of specific dietary regimens or nutritional protocols. However, the lines are blurred, and it is up to clinicians to understand where their competency is, as well as what is allowed under the license or certification where they are practicing. Knowledge of the second category, prescriptive, it is still useful to you as the clinician because you will be able to understand the state of the art in the field, with a working language that will enable you to effectively collaborate with nutritional experts on behalf of your client.

Because laws and requirements for practice vary state to state, there are a variety of training programs, both online and onsite, as well as hybrid. At the end of this book I provide several resources for study that offer training, certification, and graduate degree programs. Investigating the quality and focus of each program along with its alignment with current state laws will be essential. The integration of nutritional therapy into mental health treatment is the revolution that is currently under way. There are significant opportunities for the clinician who specializes in this subject; however, even at a minimum, integrating basic nutritional education into a client's self-care program will reap benefits.

Competency Through the Inner Laboratory

There are two intersecting aspects that lead to competent care: the kind that derives from advanced training and clinical experience, and the competency that comes from self-knowledge and experience. As mental health clinicians, we undertake some form of psychotherapy or counseling to engage the methods we ourselves will practice and to explore our own inner life to better serve our clients. This same principle should be applied to our

work in nutritional therapies when advising clients about strategies for improving well-being. This suggests that we enter our own health and healing using ourselves as a laboratory to explore the methods and practices that we propose. While we may not need to undertake every method or eat every food or nutrient we suggest, we should have an ongoing self-care plan rooted in healthy nutrition, supplementation, and detoxification.

This also provides an important self-care method for coping with the stressors of mental health practice, and it provides insight into the challenges our clients will face as they undertake change. Just as mental well-being is a lifelong process, so is changing nutritional behavior a dynamic experience that should be responsive to changing requirements of the life cycle.

The level of disclosure of one's own nutritional practice with a client will be a reflection of one's theoretical orientation. We will at times serve as a therapist, role model, guide, and coach. As a general rule, I think it is helpful to let the client know that we are on a path of health that incorporates nutritional change and how it has been helpful, without necessarily disclosing a lot of specific details or reasons for specific methods or nutritional protocols, just as we wouldn't reveal what medications we might be taking.

Why Good Food Preparation Affects Mental Health

Diet Essential: *Prepare fresh foods daily.*

Preparing fresh food is an act of self-nourishment, emotionally as well as physically. The stressors of trauma, modern life, and advertising cause us to dissociate from the simple self-care rituals that invigorate us. Many of the suggestions throughout this book are about overcoming the conditioned responses that result from the incessant message that what we put into our bodies doesn't matter to mental health. Food gathering, preparation, and sharing are rituals that, when done well, lead us into the parasympathetic state of relaxation and provide the endorphin rush of attachment and connection. These are often lost rituals, though we do still gather for holidays or special events. Infusing each step of the nutritional process with a ritual or mindful process enhances relationships and digestion and well-

being. The rituals of food preparation and sharing are rhythmic and repetitive, requiring integration of both the right and left hemispheres of the brain. It helps us realign within our own nervous system and synchronize with the nervous systems of others (Korn, 2013, 2023a). This social connection is where mental health nutrition begins.

One of the basic themes to consider throughout this book is that good, "real" food is medicine and "fake" food is toxic to brain health. A second theme is that many foods are psychoactive; that is, they alter consciousness, and like all things that alter consciousness, some foods may be beneficial or detrimental to mental well-being. The altering of consciousness is not the problem; it is the choice of substance and its effects that become problematic. Hence, my approach is to suggest choosing one's "foods as drugs" wisely with awareness, and finding the best substitutions to enhance mental health and withdraw from the dangerous "food drugs." For example, I teach my clients that coffee is a drug, not a beverage, and to use it like a drug—to achieve a desired, beneficial effect—not like an overconsumed beverage that causes negative side effects.

Real Comfort Food

If food is not satisfying or at times even comforting, dietary changes will not be sustained. We often turn to food to comfort stress or unpleasant emotions, which is not inherently a bad thing—it's the fact that we turn to unhealthy, high-carbohydrate, high-sugar, processed foods for comfort. We can use food as part of a self-comforting strategy if we do it with awareness and make choices that will enhance our health rather than put us into a soporific state. There is nothing wrong with wanting and having comfort foods, but the key is not to eat them to excess and to explore if they become more than the occasional strategy.

What are comfort foods? They are probably different for everybody, but in general comfort foods are usually high-fat, high-sugar, refined carbohydrate foods. These sugars and fats release endogenous opioids and dopamine in the brain, like the way narcotics do, creating a pleasure response. They also release glucocorticoids, which inhibit anxiety and the stress response.

Our definition of comfort food often comes from our childhood and what our parents gave us to calm us down in times of distress, or these foods may be associated with love. It might be sugary foods like donuts,

cookies, and refined carbohydrates. Others may have enjoyed white rice or white pasta with butter and salt, tapioca pudding, or Froot Loops and milk. White foods in general seem to be common comfort foods—think potatoes, bread, sour cream, bananas, and sugar. Comfort food may provide a nostalgic feeling related to cultural or familial traditions. Culturally related comfort foods have made a comeback in many restaurants.

Often we turn to comfort food when we haven't had a chance to prepare healthy foods. What might you prepare in advance to preempt the need for comfort but to satisfy and nourish yourself?

Principle of Substitution

We crave foods for a variety of reasons: we need the nutrients they offer, and the body provides a message to eat that food. People often remark that they get a craving for beef, for example. We also crave foods that we are allergic to; these foods function like a drug. Wheat and gluten are highly allergenic to people in whom it triggers opioid-like reactions. We crave food that reminds us of a certain time in our life, linked to people we have loved and lost, or comfort foods that are linked to our country of origin or holiday times. We also crave foods to alter consciousness, for comfort and anxiety reduction (carbohydrates and fats), and energy and focus (proteins and dopamine-rich coffee). Foods we crave provide chemical reactions that the brain/mind wants and needs. The key is to understand one's unique "craving" profile and interpret the foods one craves and when, to understand the (emotional) biochemistry of the foods, and to find substitutions that address these needs but are healthier and without the side effects. This is the "principle of substitutions" (see Table 1.2), which means that you can find an alternative, healthier food to provide the same effect, thus substituting a healthier food or substance for a less healthy one.

TABLE 1.2
Substituting Unhealthy Comfort Foods With Healthier Options

Unhealthy Comfort Foods	Healthier Substitutions
Bread or sweets	Sweet potatoes
Sugary treats	Smoothie sweetened with stevia

Unhealthy Comfort Foods	Healthier Substitutions
Chocolate with sugar	Unsweetened cocoa powder with stevia Homemade honey-sweetened chocolate candy
Cane sugar	Honey or maple syrup
Honey	Stevia, monk fruit
Coffee	Black tea, decaffeinated coffee, herbal coffee substitutes (roasted dandelion root, ramon nut [bread nut]), green tea, chai, or Turmeric-Rooibos Brain Chai (see recipe in Chapter 6, Box 6.19)

Each culture also has its own comfort foods—fish and chips, custard, pies, puddings, soups and stews, bangers and mash in Great Britain; *pierogi* in Poland; *kvass* and borscht in Russia; and baked beans, meat loaf, macaroni and cheese, fish sticks, pot pies, and chicken noodle soup in the United States. Many of these foods can still be part of a healthy "comfort" self-soothing plan by changing some of the ingredients, for example, making mashed potato (or mashed sweet potato) with ghee and sea salt; baked sweet potato fries dipped in homemade mayonnaise; gluten-free macaroni and cheese; homemade pizza with gluten-free crust and homemade sauce, topped with vegetables and organic sausage; healthy homemade almond-chocolate treats; and coconut black rice pudding. (For these and other healthier recipes, see Chapter 6 and Appendix H.)

Essential First Steps

Now you are ready to start making changes to feel better physically, mentally, and emotionally and to have more fun in the kitchen.

Even before a formal assessment, I work with clients to answer the following questions as a start to our discussions about their current nutritional self-care behaviors and to explore with them some initial questions:

- How many of my meals am I preparing?
- How many meals a week are "fast food"?
- How am I preparing my meals?
- Which foods make me feel good?
- Which foods make me feel bad?

- How do foods alter my consciousness?
- What foods do I like but don't often prepare?
- Who are my allies for change in the family?
- Who are my allies for change among my friends?

Table 1.3 offers a good starting exercise: making a food substitution list. The change process can be slow, so be gentle with yourself and your clients. Follow where your interest and energy take you, and while a pinch of discipline may be useful, you don't need to have too heavy a hand. Most of our clients are already too hard on themselves, so gentle self-compassion is the key to long-term success. And above all, "trust your gut" as you embark on this adventure. The next chapter explores how the "gut" affects everything from the food we digest to what nourishes our brain and body, as well as our emotional well-being.

TABLE 1.3
Exercise: Make a Food Substitutions List

This exercise builds on the concept of substituting healthier foods for unhealthy ones, while still satisfying your needs. First, list the foods that comfort you; then, as you review the list, add healthier substitutions in a second column. For example:	
Comfort Foods You Enjoy	**Healthier Substitutions**
Wheat toast with butter and jam	Baked potato with all the fixings
Chocolate bar with sugar	Hot cocoa sweetened with stevia or monk fruit and real whipped cream
Fast-food French fries	Fries baked in olive oil and dipped in cilantro mayonnaise

In each chapter's final section, I highlight the essential next steps for nutrition in mental health—a concise summary of the chapter's key action points that you can take. You can always revisit this section with your client to **reinforce progress, set priorities, and take actionable steps** toward better health.

Chapter 1: Essential Next Steps for Nutrition in Mental Health

- Manage blood glucose levels.
- Eat breakfast, lunch, dinner, and a snack before sleep.
- Decrease stimulant foods if anxious.
- Reduce or eliminate sugar/refined foods.
- Eliminate “enriched” foods.
- Identify comfort foods.
- Plan healthy nutritional “substitutions.”
- Consider your own “laboratory of competency.”
- Explore state- and discipline-specific requirements for nutritional practice.

2

The Second Brain

Trust Your Gut

Diet Essential: *Nourish both the first and the second brain.*

The discovery of the “second brain,” also known as the enteric nervous system, has confirmed our experience that the “gut” communicates with our first brain. The second “brain” controls the digestive system via a complex network of over 100 million nerves and chemicals that send messages to the central nervous system (CNS), allowing us to feel in our “guts.” When we say “I just feel in my gut that it is right,” or “My gut is telling me so,” that sensation is the second brain communicating. Feeling and sensation are part of its function, connecting to our emotional lives and intuition. Most fibers in the vagus nerve carry messages from the digestive system to the CNS. The feeling of “butterflies in the stomach” describes the physiological stress we experience in the gut. The “second brain,” a term coined by Gershon (Gershon & Margolis, 2021), controls the breakdown and absorption of foods, waste elimination, and the rhythms of peristalsis that move food along the digestive tract. It takes food particles and transforms them into little chemical messengers that support our emotional and cognitive lives. The revolution that has occurred is that we now know that this second brain makes these little messengers, the neurotransmitters, and supports bacteria that help regulate brain function. We also now know how to nourish the second brain.

One of the most significant discoveries in the past 30 years, particularly relevant to the connection between the gut (the second brain) and mental health, is the identification of the endocannabinoid (eCB) system. This system plays a crucial role in mental health and nutrition and is especially significant in regulating pain and addressing addictions. Note the root word "canna" is related to the Latin word *cannabis*. The eCB system functions in the first and second brain and is involved in all aspects of mental and physical health: the immune system, the microbiome and gut permeability, the stress response, appetite, obesity, eating disorders, the experience of pain (McPartland et al., 2014), and "bliss states."

Endocannabinoid Deficiency Syndrome

The neurologist Russo (2016) proposes a concept called "clinical endocannabinoid deficiency syndrome," which contributes to the risk of migraine, fibromyalgia, irritable bowel syndrome (IBS), schizophrenia, and PTSD. People with these disorders often benefit from cannabis use, pointing to the potential for less toxic medical treatments for mental illness and chronic disease. In addition to the cannabis plant, other sources of cannabinoids, such as the hops herb, and supplements like hemp seed oil and fish oil, help boost endocannabinoid activity.

Rest and Digest

Digestion occurs in a state of relaxation. Stress can slow down or stop the digestive process. When the nervous system goes into a "freeze, fight, or flight" response, it impairs digestive muscle contractions, reduces the secretion of digestive enzymes, and redirects blood flow away from the digestive organs where it is needed. Instead, it floods the extremities and muscles with blood, which is now poised for an emergency.

Stress wreaks havoc on the digestive system, causing esophageal spasms (hiccups), a rise in stomach acid (heartburn), nausea, diarrhea, and constipation. It exacerbates the symptoms of digestive disorders like IBS, stomach ulcers, and celiac disease (Labanski et al., 2020).

Allostatic Load and Environmental Stress

Chronic stress leads to higher allostatic load, which refers to the cumulative effects of the “wear and tear” on well-being. Allostatic load is significant to the second brain because the social stressors of poverty, discrimination, and environmental toxins affect the ability to metabolize food, especially glucose. For example, poverty, malnutrition, and poor-quality nutrition are chronic stressors that influence child and adult neurological development. This requires that we also apply a public health lens to our work in mental health nutrition. Industrial plants and their environmental and carcinogenic toxins are disproportionately built or maintained in neighborhoods where people of color live and work, leading to higher rates of diabetes and cancer. Environmental toxins in the food supply are associated with earlier puberty in girls, which has a domino effect on risk factors like depression and sexual abuse. Incorporating socioeconomic context and the complex interplay of identity and stress on mental health and nutritional status is essential to the nutritional change model (Abo Hamza et al., 2024). Our work with our clients and their families must address increasing food security and safety while addressing affordability and health disparities.

Hormones are also an essential part of the digestive process and function to regulate appetite and digestive juices. Nerves connect the brain, spinal cord, and digestive organs and release chemicals that stimulate either contraction or relaxation of the gastrointestinal (GI) tract muscles. Hunger hormones are produced and released by the stomach and small intestinal lining.

The first brain relies on the right mix of glucose and fat. If you do not consistently eat the correct combination of glucose and fats, you deprive the brain of its optimal fuel, frequently leading to hypoglycemia and ongoing cravings and hunger. Meals low in protein and fat and high in carbohydrates raise blood sugar but also drop sugar levels precipitously, sending the brain on a roller coaster. These high glycemic meals impair satiety hormones and cause an increase in hunger hormones (Yeung & Tadi, 2024), which leads to overeating. These types of high-carbohydrate meals also result in fatigue. This pattern is typical in people with mood lability, who often respond well to a diet low in carbs, rich in animal and plant protein, and moderate in fat. The “power lunch” refers to eating a lunch of protein and vegetables (no grains or alcohol) when negotiating an important contract or business exchange. This will give you a mental edge by keeping you alert and awake without the sedating effects of grains and starchy carbohydrates.

For digestion to function smoothly, one needs to be relaxed when eating. Stress leads to digestive upset, mediated by the autonomic nervous system. Under normal circumstances, the parasympathetic mode of the autonomic nervous system is the autopilot that "automatically" drives the overall function of the digestive system, from the release of digestive enzymes and juices to peristalsis and elimination. In mental health, we have long observed the relationship between anxiety and digestive problems. We once believed that anxiety drove digestive illnesses like colitis, and thus we teach relaxation exercises. This makes sense, as the parasympathetic system, our relaxation response, needs to be "on" for digestion to occur smoothly. However, we now know that the effect of the gut, or the digestive system, on anxiety and emotions in general is bidirectional due to the vast network of chemical messengers. These neurotransmitters are produced in the gut. Food-sharing rituals that encourage relaxation and communion with others enhance vagal activation, attachment, and physiological co-regulation. These rituals underlie the universal spiritual practices of giving thanks, holding hands, saying prayers, or chanting before or after meals. Mindfulness exercises such as the one described in Box 2.1 help clients engage their relaxation response and enhance their awareness.

Box 2.1
Exercise: Chewing the Raisin

To enhance parasympathetic nervous system function and relaxation, I guide clients through mindfulness exercises in the office and ask them to complete others at home and share them with other family members. Begin by reading aloud, allowing enough time to reflect on each observation and sensation:

1. Hold a raisin and observe it as though you are the first person to touch it and investigate it for the first time.
2. See the raisin in all its detail; observe every part of it—the wrinkles, the way the light shines on it.
3. Touch the raisin and explore the texture and sensation.
4. Smell the raisin and inhale its aroma. Note how this fragrance may stimulate your stomach or mouth.
5. Gently and slowly place the raisin in your mouth, and before chewing, take time to notice how it feels on your tongue and any other sensations you notice.
6. Prepare to chew the raisin by slowly finding how to position it for chewing.
7. Chew the raisin a couple of times and notice what happens when you do, tasting it in all its subtle complexities. Before swallowing, notice how the texture of the raisin changes as you chew it.

8. When you are ready, think about swallowing the raisin and experience the intention of swallowing.
9. Now swallow the raisin. Afterward, see if you can feel the raisin as it moves to your stomach. Observe how you feel after this exercise in mindful eating.

Neurotransmitters

Neurotransmitters (NTs) are brain chemicals communicating information throughout our brain and body. They relay signals between neurons. They affect mood, sleep, concentration, weight, carbohydrate cravings, and addictions, and they can contribute to depression, pain, anxiety, and insomnia when they are not in balance. Friendly bacteria in the gut produce gamma-aminobutyric acid (GABA), the "antianxiety" NT, illuminating the complex relationship between the brain and the gut. Stress impairs digestion, and poor digestion affects the neurochemicals that influence mood and well-being. The gut and the brain regulate eating behavior and appetite through NTs, and like the first brain, the gut utilizes over 30 NTs. Dopamine and serotonin are the two primary NTs regulating food intake (Gasmi et al., 2022), with 95% of the body's serotonin in the gut. Serotonin is central in regulating gut motility, contributing to the imbalance in gut function commonly seen in patients with IBS plus diarrhea (Bruta et al., 2021). When people start selective serotonin reuptake inhibitors (SSRIs) or the serotonergic amino acid 5-hydroxytryptophan (5-HTP), they can become nauseated by the increase in serotonin levels in the gut.

Impaired digestion of protein means amino acids are not available to the brain to produce NTs, directly affecting mood, sleep, and cravings. The overuse of antibiotics, along with insufficient prebiotic intake, can disrupt the balance of gut microbiota, leading to inflammation and impairing NT production, both of which can influence mood disorders. SSRIs and serotonin-norepinephrine reuptake inhibitors (SNRIs), intended to increase NT levels at synapses, may introduce additional challenges by inhibiting mitochondrial respiration (Then et al., 2017) and increasing the risk of osteoporosis due to their effects on bone metabolism (Mercurio et al., 2022). The theory of mood disorders, as primarily based on NT imbalance, is giving way to a more holistic understanding of multiple influences on mood and cognition, of which NT function is only one. Indeed, the groundbreaking work by Kirsch et al. (2008) examined the role of the placebo effect of SSRIs on depression and suggested that there is no

significant difference between the SSRI-mediated antidepressant effect and the placebo effect except in the severely depressed, and for the severely depressed it is "the relationship between initial severity and antidepressant efficacy [that] is attributable to decreased responsiveness to placebo among very severely depressed patients, rather than to increased responsiveness to medication" (p. 266). More recently, building on Kirsch's research, Jakobsen et al. (2017) have asserted that the harmful effects of SSRIs outweigh the small potential benefits.

Research on neuroplasticity and mood disorders reinforces the benefits of lifestyle modifications as a pathway to restoring well-being. Neuroplasticity refers to the brain's ability to reorganize itself by forming new neural connections throughout life. This process allows the brain to adapt to new experiences, learning, and injury. In the context of mood disorders, neuroplasticity plays a critical role in how the brain responds to stress, trauma, and changes in mood regulation, with mood disorders reflecting deficits in neuroplastic function. Omega-3 fatty acids; amino acids; psychedelic medicines such as psilocybin, LSD, and ayahuasca; and high-intensity interval training are a few nutritional and lifestyle interventions with good safety profiles that influence NT function, enhancing neuroplasticity and leading to improved mood.

In Chapter 7, I explore in depth the use of amino acid therapy as a method of influencing NTs and as a natural approach to antidepressant and antianxiety medications. These pharmaceutical-grade amino acids may be compounded according to the individual's specific biochemical needs to provide the building blocks that support specific NT production.

Essential Behavioral Steps for Relaxed Digestion

- Eat in places that induce relaxation rather than places where one feels stressed.
- Employ rituals such as communal eating, giving thanks, and potlucks; this can also reduce stress and improve digestion.
- Breathe slowly and rhythmically before eating and during the meal.
- Eat with others when possible and without the distraction of the TV or computer.
- Put down the fork or spoon between bites and let it sit for 15–30 seconds or more.

- Chew food 50 times or until almost liquid.
- Set nutrients on the kitchen table, organized by whether they are to be taken before, during, or after the meal.
- Smoking, caffeine, and alcohol consumption all impair digestion and affect the stress response. Include reducing or eliminating these three major stress factors in goal setting with the client early on.

Teach clients about mindful eating (see Box 2.2) in the office and ask them to practice at home.

Box 2.2
Exercise: Mindful Eating

Observe yourself chewing. Pay attention to the texture and flavors of the food, the smells, and the position of the food on the plate. Embrace the whole of the sensory experience. The production of saliva breaks down the food and tends to enhance the experience of texture and flavors on different parts of the tongue. Chew every bite until it becomes liquid in the mouth, allowing the food to travel down the throat and into the belly.

How Food Nourishes Your Brain, Mind, and Emotions

Food is carbohydrates, proteins, fats, water, vitamins, and minerals. Carbohydrates are sugars, starches, and fibers, either simple (e.g., in fruits, vegetables, and sugars) or complex (e.g., in whole grains, starchy vegetables, and beans). Digestion breaks down these foods into smaller particles to be absorbed in the bloodstream and used throughout the body. Digestion releases the nutrients in food so that the body utilizes them. This process takes place in the gastrointestinal tract. Carbohydrates break down into glucose, which supports brain function. Proteins from meat, fish, beans, eggs, and dairy products break down into smaller molecules called amino acids, which are the building blocks of NTs that also support brain function. Fats provide energy for the body and the brain. The brain is made up mostly of fat, including docosahexaenoic acid (DHA), arachidonic acid, cholesterol, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, and sphingolipids, suggesting why foodstuffs containing these fats are necessary for good brain function.

Fats

Fats are macronutrients that provide energy and lubrication for the brain and insulation for body organs and the body generally. They are essential for absorbing nutrients, particularly the fat-soluble Vitamins A, D, E, and K. These vitamins require fat for transport to cells. Low-fat diets, for example, are risk factors for mental distress due to inadequate levels of these essential vitamins. Three main categories of dietary fats are required for good mental health: saturated fats, monounsaturated fats, and polyunsaturated fats.

Saturated Fatty Acids

Traditional fats such as butter, coconut, tallow, and suet (from cows and lambs); fat from ducks, geese, chickens, and turkeys; and lard from pigs are all “saturated” fats. These fats are “traditional” because they are part of a culinary heritage that dates back thousands of years, across numerous traditional indigenous cultures long before the development of commercially created fats such as shortening and margarine. Natural saturated fats usually are solid at room temperature. This type of fat includes different fatty acids such as butyric acid (found in butter), lauric acid (found in coconut oil and palm oil), myristic acid (found in dairy products), palmitic acid (found in meat and palm oil), and stearic acid (found in meat and cocoa butter). These fatty acids exhibit antibacterial, antifungal, and anti-inflammatory properties that help protect the body.

It is a medical myth that saturated fats are dangerous. According to the principle of bio-individuality, it is correct to state that saturated fats are healthier for some people than for others. For example, the Inuit of the Arctic traditionally consume a diet high in saturated fats without experiencing negative health effects. In contrast, individuals of European and Japanese descent who carry the *APOE4* allele, associated with an increased genetic risk for Alzheimer’s and cardiovascular disease, do not metabolize saturated fats as efficiently and are advised to limit them to reduce health risks. Saturated animal fats (from pasture-fed livestock) provide fat-soluble Vitamins A, D, and K-2. Eating saturated fats has been shown to lower lipoprotein(a), a risk factor for cardiovascular disease, even as it raises LDL, another risk factor, further suggesting that the response to saturated fats is highly individualized and genetically determined. Saturated fats stimulate prostaglandin 3, a pain-reducing anti-inflammatory, and exert

a protective anti-inflammatory effect mediated by the vagus nerve and cholinergic anti-inflammatory pathways through the activation of cholecystokinin and nicotinic acid receptors (Luyer et al., 2005). The body can make saturated fats out of refined carbohydrates if you do not eat enough fats. This process of converting high carbohydrates to triglycerides (and not saturated fat consumption) raises triglycerides in the body. This process, if chronic, is associated with depression and vital exhaustion (Igna et al., 2011).

The Dangers of Trans Fatty Acids

A commercially created form of fat that does not occur in nature is called "trans fat," a contaminant by-product of commercial hydrogenation of vegetable oils. The process of hydrogenation converts liquid vegetable oils into creamy, spreadable substances used to make margarine and baking shortenings, but the high temperature needed to produce the products breaks down the vegetable fats and creates trans fats. Preparing foods with hydrogenated oils may result in food containing high levels of trans fats.

Changing diets to include healthy fats for brain function is one positive behavior that is easy to accomplish. The second behavior required is to eliminate unhealthy fats or trans fatty acids. The scientific evidence is strong that trans fats consumed in even limited amounts interfere with the delta-6 desaturase enzyme and other enzymes needed to convert omega-3 and omega-6 into fatty acids essential for cellular and organ health (Enig, 2000). Most commercially processed foods, such as cookies, margarine, shortening, crackers, chips, salad dressings, and snack foods, contain trans fatty acids from ingredients such as "partially hydrogenated" oils of any kind, deodorized vegetable oils, and monoglycerides and diglycerides. Encouraging clients to read labels is an excellent initial step in psychoeducation.

Polyunsaturated Fatty Acids

Polyunsaturated fats (PUFAs) include soybean, corn, sunflower, and fatty fish such as salmon, tuna, herring, mackerel, and sardines. These oils containing PUFAs are generally liquid at room temperature and solid when cooled. Nuts, seeds, fish, and leafy greens also contain polyunsaturated fats. Two types of essential fatty acids (omega-3 and omega-6) may be derived from polyunsaturated fats. Omega-9 is another, but it is a nonessential fatty acid since the body can convert omega-3 and omega-6 to produce omega-9.

It is a valuable fatty acid obtained from avocados and avocado oil. Two essential omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), must be obtained from dietary sources such as fatty fish and nuts. They are the building blocks for hormones that control immune function, blood clotting, and cell growth, as well as components of cell membranes. These PUFAs also help regulate the eCB system, which regulates appetite, food intake, and energy metabolism. Increasing EFAs in the diet has a positive effect on weight loss as well as mood. The use of polyunsaturated vegetable oils, such as corn, linseed/flax, safflower, soy, and walnut oil, and those found in margarine and shortening, has increased as people have turned away from using animal fats like lard and butter. Polyunsaturated fats are low in saturated fat and are cholesterol-free, but they become rancid more easily and are more toxic when used for frying and are thus more likely to cause inflammation and should be avoided.

Margarine and shortening also contain hydrogenated polyunsaturated vegetable oils containing trans fatty acids (see above). Avoid products with ingredients preceded by “hydrogenated” or “partially hydrogenated.” Polyunsaturated oils are also known to cause sterility and impaired immune function. Notably, liver damage, impaired reproductive health, damage to the lungs, digestive disorders, learning delays, weight gain, and neurological problems are frequently associated with polyunsaturated oil consumption.

Monounsaturated Fatty Acids

Monounsaturated fats (MUFAs) are obtained from vegetable sources such as avocado and avocado oil, olives and olive oil, and tree nuts. MUFAs include palmitoleic acid and oleic acid—oils that are normally liquid at room temperature and solid or semisolid when cold. Olive oil is best eaten raw and not used in high-temperature cooking. It is well known for its medicinal benefits on the gallbladder and for its rich source of chlorophyll, which detoxifies the intestinal tract. Other healthy foods containing MUFAs are full-fat dairy products, lamb, beef, and wildlife, such as deer, elk, moose, and bear.

Essential Fatty Acids

Introducing good-quality fats into the diet as both foods and supplements and eliminating poor-quality fats is a first step to begin a mental health

nutrition recovery program. Essential fatty acids (EFAs) are essential fats obtained only through foods. They are essential to health and recovery. The Inuit of the Arctic Circle, whose traditional diet consists of up to 70% animal fat and protein, showed few signs of mental illness or heart disease before the introduction of nonlocal foods like wheat, sugar, beef, and dairy into their diet. The primary essential fatty acids are omega-3 (linolenic acid), omega-6 (linoleic acid), and arachidonic acid. Healthy fish oils, including those from krill, sardines, salmon, and cod, can easily be integrated into the diet. A complement of fats from animals, vegetables, nuts, and seeds extracted via a "cold process" should be integrated into a daily diet for health with all other oils, along with eggs, rich in choline, for the brain and memory. Phospholipids are essential fats that form a key part of cell membranes, including neuronal membranes, and play a critical role in supporting communication between neurons. Think of the layers in lasagna; without the various fillings, lasagna would not taste much or even do much since the pasta needs the filling to add the "zest." Such are phospholipids to brain cells. Significant research demonstrates that problems in phospholipid metabolism contribute to major depression, schizophrenia, and bipolar disorder (Eggers, 2012; Horrobin, 2001; Leyse-Wallace, 2008; Zorkina et al., 2024), suggesting a role for both testing for and supplementation with EPA, as well as phosphatidylserine and phosphatidylcholine, in these disorders in particular (Eggers, 2012; Ma et al., 2022).

Carbohydrates

Carbohydrates are the second category of food nutrients. Carbohydrates generate energy for daily living and regulate fat metabolism. Protein, fats, and carbohydrates all work together to support the engine of the brain—sugar, glucose, amino acids, and fats, which lubricate and ease connection at the synapses. Too much or too little of different kinds of nutrients creates imbalances that negatively affect mood and cognitive function. For example, too much glucose from a diet high in refined carbohydrates is now considered a risk factor for dementia—now referred to as type 3 diabetes (Michailidis et al., 2022). An annual HbA1c test, as explained in Box 2.3, can provide information on type 2 diabetes and Alzheimer's risk due to insulin resistance and chronically high blood glucose levels.

Box 2.3
Blood Glucose and Alzheimer's Risk

The HbA1c test assesses an average blood glucose level over the previous three to four months. Because HbA1c is a glycation of the hemoglobin protein, the test is also a marker of protein glycation. Elevated HbA1c levels, as in type 2 diabetes, indicates that proteins including hemoglobin are being glycated. When proteins are glycated, inflammatory cytokines and free radical production are increased, leading to oxidative stress, which is a significant risk factor for Alzheimer's and brain shrinkage.

Carbohydrates are made up of sugar molecules and are either simple or complex. A single sugar molecule is a simple sugar, whereas many sugar molecules bonded together in a chain are called complex carbohydrates or starch. Sugar is the simplest carbohydrate form found in fruit, vegetables, dairy products, and refined sugar. Complex carbohydrates are either starch or fiber. Starchy vegetables, such as carrots, potatoes, and peas, and grains like wheat, rice, barley, and oats are starch sources. Starches can also be from refined foods, such as cornstarch, chips, and certain dessert foods. Complex carbohydrates provide the necessary fiber in the diet. Grains are a particular type of carbohydrate. Most people will do well with fruits and vegetables, and some will do well with grains.

Carbohydrates provide the body with the energy it needs. To be used by the body, carbohydrates require enzymes, such as amylase and lactase, to break down into simple sugars like glucose. The salivary glands and the pancreas secrete amylase. Lactase is produced in the small intestine and breaks down lactose, the sugar in milk and dairy products.

Proteins

Proteins are the third category of nutrients essential to mental and physical health. They fuel every function of living cells. During digestion, the body breaks down proteins from animal and plant sources into amino acids. Animal proteins such as whey, eggs, beef, casein, and fish differ from plant proteins such as soy, pea, hemp, and rice in terms of cholesterol and saturated fat levels, allergens, amino acid profiles, and digestion rates.

Protein Requirements

Everyone has a different need for protein relative to their individual biochemistry. Some need more protein than others. However, during stress,

protein requirements increase to support growth and repair in the body, which tends to break down under stress. People who eat the standard American or SAD diet tend to overconsume poor-quality protein at nearly twice the necessary amount, while vegetarians tend to underconsume proteins. Both approaches are problematic for mental health. Proteins from animal foods have better amino acid profiles than plant proteins, meaning they have higher amounts and proportions of the essential amino acids. However, correctly combining a complete complement of amino acids in a vegetarian diet is attainable.

When determining protein requirements, it is essential to address both quality and quantity. Eggs are a perfect protein source and provide about 5 grams protein each, the equivalent of a handful of nuts or seeds. Milk and yogurt give about 10 grams protein per cup (milk products are best eaten raw and unpasteurized). Beans, cottage cheese, and tofu each provide about 15 grams protein per cup. Meat, chicken, and fish provide about 25 grams protein per 3- to 4-ounce serving, while protein powder products may differ by about 1–1.5 scoops of powder (30 grams of whey protein or pea protein has about 25 grams protein).

Animal protein, nuts, seeds, and whey, along with greens, cruciferous vegetables, and root vegetables, all promote satiety (Baum et al., 2006), which is important when making dietary changes and in compulsive, night eating disorder and bulimia. Raw almonds are ideal to eat as a snack or at the start of a meal. This may underlie the wisdom of Ayurvedic medicine, which suggests eating 10 raw almonds daily for brain health and relaxation. I cannot think of a more straightforward daily nutritional habit to support brain health and a relaxed mood.

Protein Deficiency

Insufficient protein intake is not always the problem; instead, it is often the inadequate digestion of proteins that causes protein deficiency. To make proteins available for the body to use, they must undergo digestion, which involves being broken down by enzymes and stomach acid. Hydrochloric acid denatures (unfolds) the protein in the stomach, making it easier for digestive enzymes like pepsin to break it into smaller peptides. Low levels of hydrochloric acid leave proteins undigested, nutrient absorption reduced, and satiety signals to the brain impaired. Antacids exacerbate this process. Later, in the small intestine, the enzymes trypsin and chymotrypsin break down the peptides into amino acids, which the body can absorb and use.

Protein deficiency is most likely to occur in people on a strict vegetarian diet who do not consume adequate amounts of plant proteins or who do not combine them to obtain the complement of all amino acids. Bulimia, fruitarian diets, diets high in refined carbohydrates, and alcoholic liver damage also contribute to protein insufficiency, which in turn affects amino acid and NT levels. Symptoms of protein deficiency include a lack of mental focus, emotional instability, impaired immune function, fatigue, hair loss, and slow wound healing.

Muscle, Mood, and Mitochondria

Protein feeds muscle, and muscle feeds mood. Obtaining enough protein in the daily diet should be a central goal of mental health nutrition. The more muscle we have, the better our mood and the more gracefully we age (Cabanas-Sánchez et al., 2022; Marques et al., 2020). The body has approximately 40% muscle. One of the downsides of weight loss is it often leads to muscle loss, and with muscle loss comes fatigue and frailty. Where there is fatigue, there is a low muscle-to-fat ratio. When clients ask about how to lose weight, I ask them to focus not on weight loss per se but on increasing their muscle mass by converting fat to muscle. This builds muscle, increases mitochondria—the “little engines” inside our cells that drive our energy—and increases brain-derived neurotrophic factor (BDNF). Poor mental health *always* involves deficits in mitochondrial function and BDNF (T. Yang et al., 2020). Chronic stressors and postinfectious states, including long COVID and Epstein-Barr virus infection, are associated with depression and anxiety and derive from altered mitochondrial function (Molnar et al., 2024), affecting muscle function. A history of adverse events in early life is a risk factor for lower ATP production, affecting muscle function in older adults (Duchowny et al., 2024). While our focus here is on nutrition for mental health, there is no doubt that exercise is the third essential part of the triad of good mental health: counseling, food, and exercise. The best exercise to build muscle is resistance training. Optimal levels of protein support all three parts of the mental health triad.

Nutrition for Muscle, Mood, and Mitochondria

Most healthy people who want to maintain or build muscle should eat at least 1.5 grams protein per kilogram of body weight daily. Increase this to 2 grams after illness or when actively building muscle. Muscle synthesis requires a minimum of 20 grams protein at each meal, including 3 grams of

the most important muscle-building amino acid, leucine (Voulgaridou et al., 2023). The foods richest in leucine include whey, sardines, tuna, salmon, eggs, chicken, pine nuts, and tofu. The more active you are, the more protein you need, and restoring muscle, particularly in elders who have sarcopenia and are depressed, requires additional protein because aging decreases protein synthesis. Older bodies and those with poor digestion require proteolytic digestive enzymes to aid protein assimilation. We do not lose the need for protein as we age. Food insecurity will affect access because protein is the most expensive food group. Daily supplementation with 5 grams creatine supports muscle synthesis and is also used for depression (Kious et al., 2019). Creatine is an organic acid synthesized from the amino acids arginine, glycine, and methionine. Ensuring adequate levels of Vitamin D-3 is essential to modulate muscle growth and mood.

Box 2.4
Muscle-to-Fat Ratio

Obtain a DXA scan, also called a body composition or DEXA scan, or hydrostatic weighing, at a local university or training center to identify an accurate muscle-to-fat ratio and chart the progress of converting fat to muscle based on dietary and exercise interventions.

Hormones, Muscle, and Mood

Hormones also play an essential role in maintaining mood, muscle, and bone mass (Hirschberg et al., 2020) and are an integral part of a comprehensive nutrition and lifestyle plan to improve mental health. Testosterone supports muscle and mood, reduces beta-amyloid deposits in the brain, and improves glucose metabolism. Testosterone in men starts dropping in their thirties and drops at 1% a year. Some men experience significant effects when testosterone drops (Zitzmann, 2020). Low testosterone is associated with major depressive disorder and osteoporosis (Donovitz, 2022) in both men and women, suggesting that men benefit from testing in their mid- to late thirties and women at perimenopause. A free and total testosterone blood test will measure testosterone levels in men and women. Bioidentical hormones, derived from plants and chemically identical to those the body produces, might include testosterone, progesterone, estrogen, and DHEA. A balance of supplemental hormones is

beneficial for most women and men by midlife. A bioidentical hormone specialist clinician can assess and prescribe.

Nitric Oxide (NO) and Mental Health

Nitric oxide (NO) is an essential metabolic and vascular regulator naturally made in the body. NO is an often-ignored neuromodulator that influences mental health and is modifiable with specific nutritional interventions. It is an unconventional NT and intracellular messenger in the brain that increases blood flow and decreases blood pressure. NO plays a crucial role in modulating neurotransmission and neuroplasticity, influencing the release of glutamate, dopamine, and serotonin. Inadequate NO production increases the risk of depression, anxiety, and cognitive decline.

Increased expression of two enzymes that make NO, neuronal nitric oxide synthase (NOS) and inducible NOS, is associated with depression risk. A gene variant that makes these synthases increases depression and heart disease susceptibility (Cheah et al., 2015). NO helps reduce anxiety and depression in part because it reduces inflammation and oxidative stress. There is some evidence that NO dysregulation in schizophrenia may be a pathway to target for treatment (Nasyrova et al., 2015).

Methods to Enhance Nitric Oxide

Among the causes of diminished NO production are the SAD diet, sedentism, stress, antibiotics, antidepressants, birth control pills, NSAIDs, proton pump inhibitors (PPIs), mouthwash, and exposure to pollution, toxins, and heavy metals.

The most crucial nutritional intervention to enhance NO is eating nitrate-rich vegetables like beetroot, spinach, arugula, lettuce, celery, and Swiss chard. Supplementing with the amino acids L-arginine and L-citrulline supports NO production through the NOS pathway and ensures adequate folate from supplements and foods. Herbs that enhance NO production include garlic, ginseng (*Panax ginseng*), ginkgo biloba, turmeric, hawthorn, green tea, and rhodiola. Salivary test strips can measure NO levels, and supplements containing folate and beetroot powder are available from Neo40, NitroVasc, and Berkeley Labs.

NO Assessment: Salivary nitric oxide test strips indicate salivary nitrite levels (Berkeley Life, Human^{n}).

Chewing and Digestion

Diet Essential: *Eat only when relaxed.*

The GI tract is a long system of hollow organs creating an unbroken tube that begins at the mouth and ends at the anus. These organs include the mouth, esophagus, stomach, small intestine, large intestine, rectum, and anus. The liver, gallbladder, and pancreas are additional, solid organs that play essential roles in the digestion of food. Food enters the mouth, is chewed, and is reduced by saliva, which adds a lubricating antibacterial fluid that helps food travel down the esophagus. From there it travels into the stomach, where powerful stomach acids break it down to be further absorbed. The liver and gallbladder digest fats, followed by an enzyme-rich pancreatic juice bath leading to chyme. Incomplete digestion leads to fermentation in the digestive tract.

Digestive enzymes break down food into nutrients that the body can absorb. The salivary glands, stomach, pancreas, and intestines secrete digestive enzymes. Digestive enzymes are also mainly found in raw foods, especially in papaya and pineapple, making some raw foods *de rigueur* in every diet. Low enzyme levels may be responsible for food intolerances, most commonly to gluten, dairy, legumes, fruits, and vegetables, causing conditions like eczema and gluten intolerance.

Digestion starts in the mouth, with the breakdown of starches by chewing and mixing food with salivary enzymes, and finishes in the colon, with the excretion of waste. Stress affects digestion, beginning in the mouth. Food not chewed sufficiently can go down the esophagus in large chunks unprepared for further digestion. Stress can also affect digestion at the esophageal sphincter, where, like a drawbridge, it may open when it is supposed to close or close when it is supposed to open. Sometimes, it relaxes too much and closes on part of the stomach, pushing the stomach up, creating a hiatal hernia. When the sphincter does not close effectively, stomach acid rises into the lower esophagus, causing acid reflux or gastroesophageal reflux disease (GERD). There are high rates of GERD in people with PTSD, suggesting a link between anxiety and GERD. Conventional treatment of GERD includes the use of acid suppression therapies like PPIs, which are associated with severe headaches and

migraines (Slavin et al., 2024) and an increased rate of dementia (Pourhadi et al., 2024).

Box 2.5
Guided Visualization and Palpation for Digestion

While good food is essential to good digestion, digestion also requires a relaxed state. Reducing stress and relaxing via visualization and self-palpation (or palpation by a professional) will bring much-needed relief and decrease dissociation, which is common after years of digestive dysfunction. Appendix D explains this exercise and offers a visualization script to use. Guide your client and read or record this exercise for them, as they will benefit from your soothing voice.

First Things First: Digestion In The Mouth

Efficient digestion begins with how food is prepared. As a general rule, cooked foods are more easily digested than raw. Fuel in the form of food goes into the mouth and begins the process of digestion with the mechanical movement of chewing and the secretion of saliva, which breaks down starches.

Under stress, one eats too rapidly and swallows food whole; the acids and enzymes required to break down food cannot do their job. With food undigested in the belly, pains and gasses develop; perhaps medications are used to quell the discomfort, nutrients are malabsorbed, and organs, including the brain, are malnourished. Eating slowly allows for the initial breakdown of starches. Starchy carbohydrates require the enzyme amylase. The salivary glands store amylase and secrete it to aid in the digestion of sugars. There are two kinds of saliva: a thin, watery saliva that moistens the mouth and the food, and a thick, mucous saliva that lubricates the food and helps form it into a ball, called a bolus, ready to swallow.

The Esophagus and Stomach

The stomach receives the fuel, which the salivary enzymes should already predigest. The stomach acid then digests proteins. The stomach muscle churns the food and mixes it with the gastric juices. This is what we call the digestive fire. Food requires stomach acids to digest. This is another place where stress can interrupt digestion.

The stomach secretes pepsin and begins the process of protein digestion, and the pancreas secretes trypsin, chymotrypsin, and proteases into the small intestine; the pancreas also secretes proteases. Proteolytic enzymes, secreted by the pancreas into the small intestine, break down proteins that the stomach does not fully digest. Proteins and fats are not absorbed when there is a lack of pancreatic enzymes, and this can lead to nutritional deficiencies.

Insufficient gastric acid secretion is known as hypochlorhydria. When food is not broken down because of hypochlorhydria, it moves into the small intestine and colon undigested, and the body is not able to use it. Absent the ability to break down proteins, the second brain cannot make the NTs, such as tyrosine and tryptophan, required for healthy NT production for the first brain. This condition frequently results in anxiety, depression, pain, chronic indigestion, food allergies, and asthma.

Hydrochloric acid (HCl) is produced by the stomach and contains enzymes that help break down proteins. Gastric acid production decreases with age, and a lack of HCl can cause other digestive problems like small intestinal bacterial overgrowth (SIBO; see Box 2.6) because of elevated pH levels. SIBO inhibits nutrient absorption and assimilation of the B vitamins folate, B-6, and B-12, resulting in major depression (Logan & Katzman, 2005), and low HCl in general is associated with increased levels of anxiety. It now becomes even clearer why, over time, poor digestion means poor mental (and physical) health.

Box 2.6

Small Intestinal Bacterial Overgrowth (SIBO)

Small intestinal bacterial overgrowth (SIBO) is a differential diagnosis in patients with general gastrointestinal distress (Sorathia et al., 2023), including gas, bloating, diarrhea, and chronic pain. SIBO can cause irritable bowel syndrome (IBS), but IBS can exist without SIBO. SIBO results from colonic bacteria not usually present in the small intestine. The 2- or 3-hour hydrogen-methane breath test (Tansel & Levinthal, 2023) is a noninvasive diagnostic tool that measures exhaled hydrogen and methane gasses following ingestion of a glucose drink. Broad-spectrum antibiotics used to treat SIBO seldom work long-term because they do not address the cause(s), and SIBO often recurs (Nickles et al., 2021). Many herbs, like oil of oregano or those containing berberine, also function as antimicrobials and anti-inflammatories without the risk profile of antibiotics. Identifying the root cause of bacterial overgrowth includes improving stomach acid and gallbladder function, resolving intestinal

permeability, and improving peristalsis by reducing stress, adding fiber, and addressing ileocecal valve dysfunction with visceral manipulation of specialty abdominal massage.

Symptoms of Low Stomach Acid Production

- Feeling full after eating
- Multiple food allergies
- Gas, bloating, belching, burning, flatulence after meals
- Indigestion, diarrhea, constipation
- Undigested food in stool
- Abnormal intestinal flora or chronic *Candida* infections
- Nausea when taking supplements
- Brittle nails
- Dilated capillaries in the cheeks and nose (not related to alcoholism)
- Iron deficiency
- Adult acne

Supplemental hydrochloric acid (HCl) can stimulate and increase HCl production, which destroys harmful stomach bacteria and increases nutrient absorption. HCl also requires zinc, copper, iron, magnesium, boron, calcium, selenium, and Vitamins B-3 and B-12 to do its job efficiently, and supplementing with B-12 and folate will support HCl production and the absorption of proteins. When there is also GERD, soothe the inflammation for four weeks before starting HCl.

The Liver and Gallbladder

While the stomach is adding fire to the mix, the gallbladder is emulsifying the fats needed to elevate mood, decrease stress, maintain artery health, and reduce inflammation. The brain is mostly docosahexaenoic acid, and neurons require these fats to function smoothly, just like a car needs lubrication. Without access to good fats or the ability to use them, the brain does not get the fuel it requires. If the gallbladder is not functioning well, dietary fats or fish oil supplements will be less effective because those nutrients cannot be emulsified and assimilated.

The liver and gallbladder typically work together to emulsify fat, just like dish soap breaks down the grease in a frying pan. Bile, made up of bile salts, cholesterol esters, and lecithin, emulsifies the fats and separates them into smaller fat globules to pass through the digestive system. Contrary to the conventional belief that one must follow a low-fat diet for gallbladder problems, a very low-fat diet can cause the gallbladder's "muscle motor" to slow down. This particular muscle pushes out bile into the duodenum. When the muscle fails, it leads to a buildup of sludge, like a stagnant pond that backs up. Good-quality oils, including a daily dose of extra virgin olive oil mixed with lemon juice, prevent this immobility.

Bile is derived from the Latin *bilis*, meaning anger or displeasure. Traditional Chinese medicine suggests the emotion of anger derives from a congested gallbladder and liver. Sayings like "that takes gall" and "I got my bile up" refer to the long-held belief that a congested liver/gallbladder results in anger and rage. Junk food, refined foods, trans fatty acids, and alcohol abuse contribute to chronic gallbladder congestion, low bile output, gravel, and gallstones. Other symptoms of gallbladder problems include burping, flatulence, a feeling of heaviness after a meal, shoulder pain, pain under the ribs on the right side or in the back directly behind the diaphragm, and nausea. Awakening with bloodshot eyes after a heavy meal the night before is another sign of gallbladder distress. People who live with chronic pain and use NSAIDs or opiates risk gallbladder problems. NSAIDs alter bile composition and irritate the GI tract, and opiates impair gallbladder function by causing spasms in the sphincter of Oddi, leading to reduced bile flow and acute pain.

Medical practitioners in the United States remove over 1.2 million gallbladders annually. Treatable gallbladder disease is at epidemic levels and is at the heart of poor mental health. Poor liver and gallbladder function worsens stress and depression. Some medical researchers suggest that there is a genetic cause for gallbladder disease (and diabetes) within certain cultural groups, especially in American Indians and peoples south of the US border. However, there was virtually no gallbladder disease among Indigenous American peoples before the "modern" SAD diet arrived. Removal of the gallbladder only aggravates health problems by decreasing the capacity to digest fats. Surgically removing the gallbladder is like throwing out the garbage pail instead of simply cleaning it. Avoid surgery if at all possible. For those who have had their gallbladder removed,

replacement supplements can include natural ox bile, betaine, taurine, Vitamin C, and pancrelipase to support fat digestion and alleviate the frequently persistent digestive difficulties people experience without a gallbladder. Beets and beet greens are rich in betaine and are among the best foods for gallbladder function and mental health.

Box 2.7
Castor Oil Packs for Digestion, Pain, and Liver Function

This old folk remedy is soothing to internal organs and is believed to mobilize the release of toxins. The compresses are beneficial when applied to the liver, digestive organs, and areas of pain. They also stimulate the lymphatic system. Topical castor oil (from the plant *Ricinus communis*) is anti-inflammatory due to ricinoleic acid that penetrates the skin (Kennedy & Keaton, 2012). For directions, see Appendix E.

Cholesterol as Hormone Precursor

Most cholesterol is made in the liver. Sufficient cholesterol is essential for mental health. Despite the popularized view that cholesterol is dangerous, I want to emphasize that cholesterol is necessary for proper brain and nervous system function and is an important part of our ability to use serotonin. People have differing needs for cholesterol; some do well with total cholesterol at 240, and others do well at 180. For those whose cholesterol dips too low for their individual needs, anxiety may follow.

The body maintains a balance of cholesterol by producing more of the substance when insufficient amounts are available from food. The total body cholesterol level can be lower when higher quantities than the body needs are consumed (Enig, 2000).

Physicians often blame cholesterol as a leading cause of heart disease, but this belief is inaccurate (Fernandez & Murillo, 2022). Indeed, too low cholesterol poses a mental health hazard. Efforts to reduce cholesterol with diets deficient in fat and with medications contribute to significant mental distress, including anxiety, muscle pain, memory loss, and suicide attempts (Choi et al., 2023; González-Castro et al., 2021; Perez-Rodriguez et al., 2008).

Cholesterol is a precursor of hormones and the raw material for producing Vitamin D. It is also a “liquid bandage” that is released to scout out and repair arterial inflammation frequently caused by trans fats, stress,

manufactured foods, contamination from waste, and environmental toxins. The key to managing cholesterol levels is to reduce inflammation, not necessarily reduce cholesterol per se. Hormones made by cholesterol are important for blood sugar regulation, mineral metabolism, and our ability to tolerate stress.

Restricting cholesterol in the diet does little to affect serum cholesterol, and it reduces omega-3 levels. This affects the ratio of omega-3 to omega-6, increasing omega-6 levels, altering the membranes of brain tissues, and increasing one's susceptibility to depression. In populations where omega-3 intake is higher, rates of depression are lower (Carnegie et al., 2024). Indeed, as I explore in Chapter 4, low cholesterol is implicated in autism spectrum disorders.

Cholesterol is also essential for synthesizing Vitamin D, the fat-soluble vitamin. Low levels of Vitamin D are associated with chronic pain, fibromyalgia, and depression (Ersoy et al., 2024). Cholesterol is also the precursor of glucocorticoids (necessary for blood sugar regulation), mineralocorticoids (essential for mineral balance), ligament strength, blood pressure regulation, and sex hormones. Cholesterol is the foundational molecule for pregnenolone, the precursor to virtually all other steroid hormones (including progesterone, estrogen cortisol, aldosterone, and testosterone). The CNS and the adrenal glands synthesize pregnenolone. Low levels are associated with depression, anxiety, and pain. Pregnenolone metabolizes to allopregnanolone, an anxiolytic, increasing acetylcholine release, which is central to memory and focus and enhances the creation of neurons. Lowering cholesterol decreases the capacity to make pregnenolone, an essential ingredient of several brain nutrient support compounds required for brain recovery, which I discuss in Chapter 3.

Cholesterol production and absorption are genetically determined. This suggests the need to provide a genomic-specific analysis that informs personalized nutrition, lifestyle, and ideal levels based on principles of bio-individuality. These decisions extend into the presence of one or two *APOE4* alleles, which negatively affect cholesterol transport and confer greater risk for the development of Alzheimer's and cardiovascular disease. The presence of the *APOE4* allele dysregulates cholesterol metabolism. Some research suggests that individuals with this allele do not process saturated fats efficiently, require higher levels of omega-3, and do not show improvement on a ketogenic diet (Yassine & Finch, 2020). However, Toups

et al. (2022) suggest a precision-based, ketoflex diet for people with cognitive decline and Alzheimer's disease.

Obtain a lipoprotein fractionation profile to identify specific, actionable information about blood lipids, including total cholesterol, LDL, HDL, particle size, and triglycerides. The Boston Heart Cholesterol Balance® test assesses cellular cholesterol production and differentiates it from gastrointestinal cholesterol absorption. The results can guide dietary or pharmaceutical interventions.

Statins

Statins, a group of drugs including atorvastatin (Lipitor), fluvastatin (Lescol), lovastatin (Mevacor), lovastatin extended release (Altoprev), pitavastatin (Livalo), pravastatin (Pravachol), rosuvastatin (Crestor), and simvastatin (Zocor), are primarily used to lower serum cholesterol levels.

Statins are known to cause significant side effects, such as muscle wasting and weakness, heart failure, depression, cancer, and cognitive impairment (Evans & Golomb, 2009; Golomb & Evans, 2008). Numerous studies have demonstrated no significant relationship between dietary cholesterol intake and heart disease (McNamara, 2014). A survey of 50,000 individuals in Norway found that women with total cholesterol over 200 mg/dL lived longer than those with lower cholesterol (Petursson et al., 2012). Low plasma cholesterol (160 mg/dL) may serve as a biological marker of suicidality (Vuksan-´Cusa et al., 2009) and is linked with depression and increased mortality from accidents and homicides (Leyse-Wallace, 2008). The effects of statins on cognitive function research show both benefits and deficits, often associated with multiple factors, including blood glucose and inflammatory markers. Base your decisions about statin use on bio-individual needs. There are significant side effects, limited benefits in reducing mortality due to cardiovascular disease, limited research on statin use with women, and possible benefits for a selected high-risk population (Perlmutter et al., 2013). Pharmaceutical alternatives to statins include ezetimibe, PCSK9 Inhibitors like Repatha, and bempedoic acid.

Pancreas

The pancreas is an organ that functions as an exocrine and an endocrine gland. The pancreatic juices consist of proteolytic (protein-digesting)

enzymes that help further break down starches, fats, and proteins. As an exocrine gland, the pancreas secretes digestive enzymes into the small intestine that help break down the chyme that has just left the stomach and entered the duodenum. The pancreatic enzymes secreted into the duodenum include the proteases trypsinogen, chymotrypsinogen, amylase, and lipase. The salivary gland also secretes small amounts of lipase to break down fats. This vital enzyme converts fats into compounds beneficial to the body, such as fatty acids and glycerol. As an endocrine gland, the pancreas produces and releases hormones into the bloodstream that help regulate glucose metabolism and blood glucose levels. These hormones include insulin, which lowers blood sugar, and glucagon, which raises blood sugar.

Pancreatic enzymes, including supplemental proteolytic enzymes, improve mental health by reducing inflammation, as explained in Box 2.8.

Box 2.8
Proteolytic Enzymes Reduce Inflammation and Pain

Proteolytic enzymes serve two vital mental health functions:

1. When taken with food, these inexpensive enzymes help digest food protein and mediate food allergies. Supplement with protein-digesting enzymes to support the pancreas.
2. When taken on an empty stomach, proteolytic enzymes “digest” inflammatory cells/proteins, thereby improving immune function, reducing pain, inhibiting fibrin formation in damaged tissues, and increasing circulation to inflamed areas. Papain (from green papaya), bromelain (from unripe pineapple), and serratiopeptidase (from the silkworm) are food and supplement sources of these anti-inflammatories. Nattokinase (obtained in the food natto or via supplement) is used for heart and circulatory health; it digests fibrin, thins blood, and aids blood coagulation.

The Small Intestine

Once the stomach digests food, it moves into the small intestine, which works by peristalsis, the involuntary, undulating, wave-like movement of muscle, to move food through, by contracting and relaxing. Stress disrupts these natural peristaltic rhythms and may speed things up or even stop them altogether, like jamming on the car brakes and backing everything up or accelerating and increasing wave action, dumping waste too quickly. Either stress effect leads to discomfort. The small intestine also secretes digestive

juices and enzymes so that foods, water, and minerals are absorbed there and passed into the bloodstream to be processed further and utilized by the body. Here the lymphatic system absorbs fatty acids and vitamins, and simple sugars, amino acids, glycerol, some vitamins, and salt are brought to the liver. The essential role of nutrition and the intestines in mental health is described in Jill's story in Box 2.9.

Box 2.9
Jill's Story: How the Gut Affects Mental Health

Jill was an accomplished, middle-aged musician who presented with chronic anxious depression, adult acne, and chronic colitis that at times interfered with her work. She was taking antianxiety medication and also medication for colitis. Her dietary options were very limited because she did not digest food well. She ate no fruits or raw vegetables and ate a lot of toast, butter, and chocolate milk. Her medical history revealed the use of antibiotics as a child, missed school days due to stomach aches, difficulty gaining weight, and acne. Tests for celiac disease were negative. I referred her to a local naturopathic physician with the request to conduct more extensive testing that analyzed blood, saliva, and feces for food sensitivities to dairy and gluten, gut bacterial levels, and pancreatic enzyme levels. Testing showed gluten and dairy intolerance, low levels of digestive enzymes, and the harmful intestinal bacteria *Clostridium difficile*. The naturopath and I consulted and agreed on a nutritional therapy course. We decided that Jill would benefit from high-dose probiotic supplementation, but she suggested a fecal transplant if that did not overtake the *C. difficile*.

Jill immediately eliminated gluten and cow's milk dairy and began making simple meat and chicken broths. After a week, she added some root vegetables and leafy greens to the broth and strained them to absorb the nutrients, but she still had reduced fiber. We supplemented her diet with high-dose probiotics because antibiotics would only exacerbate her gut imbalance. However, by eliminating gluten and casein and by introducing fermented foods, probiotic supplementation, and bone and mineral broths rich in gut-soothing gelatin, she experienced an improvement in 6 weeks. Jill was able to eliminate colitis medication, and at 8 weeks her anxiety decreased and she was able to wean off all her medications. At 12 weeks her acne, which commonly occurs with depression and anxiety and is often a symptom of dairy sensitivity, had virtually cleared. We continued our work together and slowly included small amounts of raw foods at six months. Jill did not miss any more days at work due to digestive problems, and she felt restored and much happier.

The Microbiome of the Intestines

The intestine, and indeed the whole digestive tract, is a major part of the *microbiome*. Think of this like your neighborhood community, with people of all kinds—some friendly, and some too noisy. Like your neighborhood, your microbiome is composed of various microorganisms. A healthy neighborhood predominates with friendly people who cooperate, support

each other, and effectively manage troublemakers. And so it is with a healthy microbiome: it can tolerate some dissension, but too much leads to illness that, if not addressed, can damage the whole neighborhood (digestive system) and affect the surrounding communities (brain, mental health). Furthermore, bacteria within the gut are manipulative (Alcock et al., 2014): they both influence our choices of foods, based on their needs, and in turn also respond to our selection of foods.

The current term of reference for these bacteria or flora is *microbiota*, with *microbiome* referring to the body's microbial garden growing in the gut, skin, and mouth. This microbiome is where the "gut-brain" connection seesaws back and forth, communicating, feeding the neighborhood, including the first brain. Healthy bacteria and fungi populate the microbiome and, when in abundance, keep levels of unhealthy bacteria from overpopulating. Healthy bacteria support the secretion and proliferation of NTs like GABA, which have receptors in the stomach and esophagus. Healthy bacteria that populate the gut are essential for stress regulation and GABA, which reduces anxiety (Bercik et al., 2011; Bravo et al., 2011).

One of our goals with nutrition is to support the healthy members of the community so that we are protected from the dangerous ones.

Intestinal or "Gut" Permeability

The primary functions of the gastrointestinal tract are digestion and absorption of nutrients. Among the primary purposes of the intestines is to serve as the gatekeeper, a barrier mechanism to keep toxins and proteins out of the bloodstream that do not belong and to allow in those that do. Think of the drain in the kitchen sink: the finer the mesh, the more waste it collects, and the waste goes down the drain with little problem. The larger the mesh, the more particles get through and cause problems because they should not have breached the drain. "Leaky gut" or intestinal permeability is when toxins and allergens breach this barrier.

Excess permeability allows molecules such as certain proteins from foods or toxins to enter the bloodstream, contributing to allergies, autoimmune disorders, and inflammation. These toxins then travel to the brain and cross the permeable blood-brain barrier, which protects the brain from unwanted substances and allows in the beneficial substances it requires. The blood-brain barrier is like the intestinal barrier, subject to permeability that exposes it to toxins.

Symptoms of increased intestinal permeability include abdominal pain, food allergies and intolerances, and cognitive and memory problems. Increased intestinal permeability increases the risk of alcoholism, autism, ADHD, and multiple food and chemical sensitivities (Dargenio et al., 2023).

There is a strong association between depression and a disrupted microbiome (Kopera et al., 2024), leading to gastrointestinal symptoms in the upper GI tract, like nausea, vomiting, bloating, indigestion, and the colon, including diarrhea and constipation (J. Huang et al., 2021). If the integrity of the intestinal epithelial walls is too permeable, then inflammatory cytokines send signals via vagal activation or crossing the blood-brain barrier.

Intestinal permeability is an important problem that is common in all mental illness categories. One of the main reasons gluten and casein intolerance contribute to mental illness, including neurodevelopmental illnesses, is that they increase intestinal permeability (Madison & Bailey, 2024). The gluten protein gliadin triggers release of the protein zonulin, which increases the permeability between cells of the wall of the digestive tract, leading to system-wide inflammation causing neurological, autoimmune, and mental health problems (Fasano, 2011).

There are other influences that exacerbate intestinal permeability, including low dietary fiber intake, excess of harmful microbiota, alcohol, age, Crohn’s disease, cystic fibrosis, rheumatoid arthritis, ankylosing spondylitis, atopic eczema, HIV, and certain medications, especially NSAIDs and antibiotics. Autoimmune disease is associated with higher rates of mental illness, and increased intestinal permeability contributes to autoimmune disease. Patients with autoimmune disease should be screened for depression, and treatment should focus on improving intestinal permeability. Stress also increases intestinal permeability. This can lead to the release of mast cells associated with allergic immune response and inflammatory cytokines, which negatively affect GI function (Konturek et al., 2011). Following gastric bypass surgery, people frequently develop immune-related arthritis due to the production of antigens by the intestinal bacteria, which then move into the bloodstream. This likely explains why short fasting periods (Sundqvist et al., 1982) and even antibiotic therapies followed by restoration of healthy flora benefit people with rheumatoid arthritis who suffer from high rates of depression.

Box 2.10
Intestinal Permeability Protocol

Use the amino acid glutamine (5–10 g/day) or combine it with bioavailable curcumin for 30 days when intestinal permeability is suspected or diagnosed to heal the intestinal walls and before starting additional nutrient protocols. Incorporate a polyphenol-rich diet, including apples, berries, citrus fruit, plums, broccoli, cocoa, tea, and coffee.

Box 2.11
Integrating Hypnotherapy, EMDR, Cognitive Behavioral Therapy, and Nutrition for Disorders of Gut-Brain Interaction

The term “disorders of gut-brain interaction” (DGBI) has replaced “functional gastrointestinal disorders” to better reflect the bidirectional relationship between the “first brain” and the “second brain” of our gut. These digestive disorders are characterized by symptoms that cannot be explained by structural abnormalities but result from complex interactions between the nervous system and gastrointestinal tract, which affect motility, sensation, and immune function. Examples include irritable bowel syndrome and its variants, GERD, and functional dyspepsia. Stress and nutrition play critical roles in developing DGBI.

Advances in testing have improved our ability to identify imbalances in gut microbiota and assess factors like intestinal permeability, SIBO, and FODMAP sensitivity, which are particularly helpful for managing IBS. Evidence-based psychological interventions such as CBT, EMDR (Wertheim et al., 2023), and hypnotherapy (Vasant & Whorwell, 2019) are essential to efficacy and combine well with nutritional changes. Hypnotherapy induces a trance state of deep relaxation, often associated with alpha-theta waves, which leads to creative hypnagogic imagery, or delta brain waves of restorative sleep. This state facilitates access to subconscious memories and patterns that influence gut-brain interaction. These functional GI disorders are highly associated with traumatic experiences (Jagielski et al., 2021) and can lead to chronic dissociation. EMDR, bilateral stimulation, and saccadic eye movement were influenced by yogic eye exercises that stimulate the oculomotor connections, improve focus, and influence neural integration to decondition traumatic memories leading to improvement in chronic digestive pain (Wertheim et al., 2023). Hypnotherapy addresses the link between trauma and gut distress by accessing state-dependent memory, learning, and behavior (SDMLB), a concept suggesting that memories and experiences encoded in one state of consciousness can only be accessed by returning to a similar state. The fluctuating hyperactivity and hypoactivity associated with PTSD are reflected physically in the shifting motility of elimination, leading to diarrhea (hyperactive motility) and constipation (hypoactive motility). Hypnotherapy provides a controlled trance state to access and reframe the connection between traumatic memories and how the nervous system then governs digestion and elimination.

Hypnotherapeutic methods may begin with relaxation and trance induction and can then be combined with CBT and mindfulness- or solution-focused methods. The deep relaxation and openness engendered during hypnotherapy create greater receptivity to cognitive restructuring techniques used in CBT. Milton Erickson’s colleague, the psychologist and

hypnotherapist Ernest Rossi, advanced our understanding of SDMLB and hypnotherapy. He demonstrated that hypnotherapy could access and reframe traumatic memories that "speak through the body." Later, he explored the role of stress in gene expression and the health of the immune system. Combining hypnotherapy with CBT, or selecting EMDR along with nutritional interventions and body-focused exercises, such as body scans and self-palpation practice (see Box 2.5), allows for tailored care at different stages of readiness.

The Large Intestine, Rectum, and Anus

Once the small intestine sends nutrients into the bloodstream, what is left is undigested food. This chyme becomes a waste product that moves into the large intestine (colon), where any remaining water and nutrients are absorbed. With the water extracted, the waste becomes solid in the form of stool and then passes via more peristaltic waves into the sigmoid section of the intestine, which moves it to the rectum, which holds it until it passes through the anus.

Stress and nutritionally related digestive problems can also affect the end of the alimentary canal, at the rectum and anus. For example, fecal matter that does not have enough fluid or fiber can lead to constipation and hemorrhoids. There is a significant association in children and adults between lower bowel function problems like hemorrhoids, constipation, and diarrhea and a history of sexual and physical abuse (Imhoff et al., 2012; Rajindrajith et al., 2014). The combination of trauma treatment and nutrition is essential for improving these conditions. This may include increased fiber, stress reduction, mindful eating, and belly self-massage (Korn, 2013, 2023a). You can watch a video about this method on YouTube (https://youtu.be/ydqPuquexXg).

Hemorrhoid Treatment

An Indigenous African remedy for treating external hemorrhoids is the application of the pulp from the inner peel of a ripe banana. Scrape the pulp and fashion into small suppositories. Place several small suppositories in the freezer and gently insert just into the anus at bedtime, and wear a protective pad. Repeat for three nights. The pulp is rich in quercetin, Vitamin C, and carotenoids, all soothing and anti-inflammatory.

Bristol Stool Scale

Use the Bristol Stool Scale (see Appendix F) with clients as a simple visual and written scale that enables them to track and describe stool consistency and understand its indications.

Fiber and Fermented Foods: Your “Best Friends Forever”

Fiber intake is essential to a healthy colon and mental health. There are digestible and nondigestible forms of fiber. Leafy green vegetables, fruits, legumes, nuts, and grains are abundant sources of indigestible carbohydrates. Fiber has no calories or food energy, yet it is a crucial component of a healthy diet. It passes through the digestive tract undigested, but in the process it sweeps up the debris along the colon walls and adds content to the digested food. People benefit from at least 25 up to 45 grams of fiber daily, depending on body size and activity. Fiber also causes the microbes in the gut to release a waste product called acetate, a short-chain fatty acid (Frost et al., 2014). Acetate goes to the hypothalamus and sends signals to stop eating, which then suppresses appetite.

There are two types of fiber: soluble and insoluble. Soluble fiber slows digestion by absorbing water and forming a gel in the digestive tract. It increases the feeling of fullness, slows down the rate at which the stomach empties, and slows down the absorption of glucose, making it essential in the diets of people with diabetes. Oat bran, nuts, beans, lentils, psyllium husk, peas, chia seeds, barley, and some fruits and vegetables contain soluble fiber.

In contrast, insoluble fiber does not dissolve in water. Instead, it absorbs water and puffs up like a sponge, passing through the digestive tract and helping push materials through. In this way, it helps prevent constipation by providing a laxative effect. Insoluble fiber is found in wheat bran, corn, whole grains, oat bran, seeds and nuts, brown rice, flaxseed, and the skins of many fruits and vegetables.

Traditional or Paleolithic diets provide 10 times more fiber than the SAD diet. Also known as prebiotics, fiber provides “soil” for the colon’s microbiome garden and nourishes healthy bacteria to grow.

Prebiotics

Prebiotics set the stage in the colonic garden so probiotics or microbiota can flourish and not allow the harmful bacteria to propagate, much like healthy soil will enable seeds to develop into fruit and be resistant to the effects of pests. Prebiotics are soluble, indigestible dietary fibers that support the beneficial gut microbiota (bacteria) that live in the colon. Prebiotics include

raw and cooked onions, garlic, Jerusalem artichokes, leeks, asparagus, wheat, beans, bananas, agave, and dandelion and chicory root, often found in coffee substitutes.

Chia is an exceptional prebiotic as it has a mix of soluble and insoluble fiber and the added benefit of being rich in omega-3 fatty acids. Traditional dietary practices include drinking a glass of water each morning in which ground chia or flax has been soaked, thus providing fatty acids and fiber. While juicing has many benefits, its main detraction, if done to the exclusion of eating whole fruits and vegetables, is that it removes most of the fiber from foods.

Fermented Foods and Probiotics

Probiotics are beneficial live microorganisms that colonize the intestines, maintaining a balance of the beneficial gut microbiota (bacteria); 400–500 different kinds of healthy microbiota inhabit the gut. They promote a healthy digestive system; prevent infections, diarrhea, and inflammation; and improve immune health. They also produce nutrients, such as K and B vitamins, and some short-chain fatty acids like lactic acid. Preliminary research on the oral administration of GABA derived from *Lactobacillus hilgardii* fermentation has been shown to reduce anxiety (Bested et al., 2013).

Probiotics are also called “psychobiotics,” which refers to organisms that produce a mental health benefit (Dziedzic et al., 2024; Ķimse et al., 2024). These bacteria produce both GABA and serotonin and have been shown to reduce stress and decrease anxiety. Maintaining healthy bacterial levels in the gut supports NT activity in brain health. Early-life stress sensitizes specific gut microbiota to later-life stress exposure. One study showed that lactobacilli, found in the traditional Korean food kimchi, increased hippocampal brain-derived neurotrophic factor (BDNF), a protein in the brain involved with neuronal survival (Jung et al., 2012).

The lack of diverse intestinal microbiota negatively affects health. *Lactobacillus GG* is safe at an early age and helps reduce food allergies and associated inflammation. One reason that breastfed babies are thought to have fewer allergies is that breast milk contains beneficial microbiota. Arriving through the birth canal and being washed with the mother’s bacteria, in contrast to Cesarean-section-born children, provides improved immune system health.

Sources of probiotics include fermented foods like sauerkraut, kombucha, kimchi, miso, microalgae, and brewer's yeast, as well as yogurt and cheeses with live cultures and probiotic supplements. Yakult is a probiotic drink made in Japan that has been shown to reduce recurrence of bladder infection. One should ingest probiotic foods several times a week.

Varieties of Probiotics

- *Akkermansia muciniphila* is a beneficial gut bacterium discovered in 2004. It is a gram-negative, mucin-degrading bacterium that thrives in the mucus layer of the gut and contributes to restoring health in leaky gut and inflammation (Chelakkot et al., 2018) that results from antibiotic use, gluten intolerance, excessive alcohol use, and environmental exposures. *Akkermansia* responds to a diet rich in polyphenols, including cranberries, pomegranate, and green tea. Pendulum is a source of an enteric-coated capsule for oral use.
- *Lactobacillus acidophilus* is a lactic acid bacteria found in yogurt and kefir containing live and active cultures, kimchi, kombucha, fermented soy products, and dietary supplements.
- *Lactobacillus casei* is a lactic acid bacteria found in yogurt and kefir containing live and active cultures and in naturally aged unpasteurized cheeses.
- *Lactobacillus bulgaricus* converts lactose and other sugars into lactic acid. Swiss cheese and yogurt contain live and active cultures, and other fermented food products contain *L. bulgaricus*.
- *Streptococcus thermophilus* is a lactic acid bacterium that contains growth-promoting nutrients in fermented milk and cheese products.
- *Bifidobacteria* make short-chain fatty acids and lactic acid and prevent gastrointestinal disorders. These are found in yogurt, cheese, and fermented soy products.
- *Bifidobacterium longum 1714* has been shown to be anxiolytic, decrease stress, and improve sleep directly.
- *Saccharomyces boulardii* is a probiotic yeast of the *Saccharomyces cerevisiae* variety (also known as baker's or brewer's yeast). It has demonstrated efficacy for GI disorders and is especially useful for people with *Candida* overgrowth. It appears to modulate immune

function in the gut and reduce inflammatory processes (Pais et al., 2020).

Postbiotics

Postbiotics are the by-products of the fermentation process of prebiotic fibers and probiotic bacteria in the colon. They support the intestinal epithelial barrier and modulate immune and inflammatory responses. Postbiotics (that we can enhance through diet and oral supplementation) include B vitamins, Vitamin K, and short-chain fatty acids (SCFAs) like butyrate (Portincasa et al., 2022), the preferred energy source for colon cells. It reduces inflammation and significantly increases the satiety hormones glucagon-like peptide 1 (GLP-1) and peptide tyrosine tyrosine (PYY) in the gut and blood. Butyrate increases glutathione levels, which reduces oxidative stress and maintains BDNF, which also improves depression (Kopera et al., 2024) and reduces sarcopenia in older adults. Given the high prevalence of anxiety and depression in people with colon dysfunction, which worsens during acute illness, optimizing butyrate should be considered in all colon dysfunction like IBS (e.g., Crohn's, ulcerative colitis) (Recharla et al., 2023). Where there is functional colon distress, supplement with sodium butyrate or calcium magnesium butyrate (1 g/meal). Butyrate is found in dairy products and eggs, and eating resistant starch will enhance butyrate. However, supplementation should be used along with dietary changes to achieve the best results. Evidence shows that butyrate enemas (Luceri et al., 2016) can effectively treat ulcerative colitis. Compounding pharmacies have the enema formulation available.

Gas

Gas is a natural by-product of the digestion of sugars and starches, and elimination via either the oral route (belching) or anal route (flatulence) is normal. Excessive gas production can lead to discomfort or pain in the belly and even legs, and this signals digestion that will benefit from both digestive enzymes and exploring possible sensitivities. Beans are an example of a food containing a sugar called oligosaccharide, which is not digestible and thus leads to gas but is beneficial when it serves as a prebiotic once it reaches the colon. To reduce gas, reduce the types of foods you eat at each meal. Add spices and herbs (carminatives) to foods to decrease gas or aid its release once formed. The fennel and licorice seeds

offered after an Indian meal are carminative herbs, just like the Mexican culinary tradition of adding the green herb *epazote* (wormseed) to cooked beans. Adding black pepper, dill, basil, ginger, cardamom, and parsley to cooked or raw food also reduces gas, as does drinking a cup of peppermint tea following a meal.

Chapter 2: Essential Next Steps to Nourish the Second Brain

This chapter has explored the second brain and how digestion works through communication with the first brain. Many of the foods we eat nourish this complex network, and some poor-quality foods can interrupt communication, leading to mental health problems. Creating change at almost any stage of this process or substituting a more appropriate food will bring improvement. It becomes a step-by-step process of change that incorporates diet, supplementation, relaxation optimized with exercise, and abdominal bodywork.

- Eat only when relaxed.
- Incorporate rituals of mindfulness before meals.
- Chew food until it is almost liquid.
- Eliminate trans fats from the diet.
- Ensure sufficient digestive enzymes.
- Identify each organ of digestion and ensure it is working well.
- Treat gut permeability.
- Eat a variety of prebiotic foods, including soluble and insoluble fibers.
- Eat a variety of probiotic “fermented” foods.
- Ensure adequate postbiotic production.
- Engage activities that enhance mitochondria and muscle building to enhance mood.
- Examine nitric oxide (NO) production.

3

Listening to Your Clients About Their Diet and Health

Assessment Techniques

Diet Essential: *Symptoms tell a story of nutritional and emotional challenges.*

We begin an integrative mental health nutrition assessment during the first meeting with a client. As mental health practitioners, we conduct psychologically oriented intakes and assessments; however, a comprehensive physical health and nutrition/dietary history is one of the most illuminating additions to mental health assessments.

Over time, as we learn to put together the pieces of someone's story and its meaning for their health and well-being, we learn to see the patterns of their physical health history and the bidirectional effects of physical and mental influences on health. Including a physical health history, nutritional history, and current food and preparation patterns will help identify and prioritize the following steps, including underlying causes to correct through dietary and nutritional interventions.

The assessment process comprises the following:

1. Educate the client about the nutritional basis for their symptoms.
2. Engage the client's inner wisdom and sense of their needs.

3. Connect mental health symptoms with physical symptoms or conditions.
4. Bridge health experiences and symptoms of the past with those in the present.
5. Identify where food-related behaviors may be an effort to reestablish balance in the system.
6. Identify alternatives to current behaviors that will bring positive, lasting results.
7. Provide hope for methods that can reduce any current side effects.
8. Identify three nutritional goals to begin the change process.

Assessment as Education

The partnership model suggests that the clinician and client work together to find the best approaches for the client. The clinician empowers the client and walks with them step by step. It is not authoritarian; it is authoritative. The clinician supports the client in discovering what works best for them in the context of the best available knowledge and shared decision-making. Finding opportunities to empower the client helps them overcome learned helplessness and the social conditioning that the clinician is the *only* expert.

When conducting a client assessment, I share the metaphor of a jigsaw puzzle we co-construct with the client. Most of our complexly ill clients have tried many approaches to restoring their health, often with limited success. Healthcare delivery is so compartmentalized that it often precludes seeing the whole health picture. Each clinician puts together a few pieces of the puzzle, but the client needs help to see how all the pieces fit together. In my experience, this is the major challenge clients face when seeking help. They see specialists for each type of symptom, whether mental or physical, but no one helps them to “put the pieces together” to tell a coherent story. I share with the client that we will identify and assemble seemingly disparate pieces about one’s health history and symptoms to understand how everything fits together. From this, we will create a new picture that provides insight into causative and root factors. These then will point us toward the following steps to take.

People want to know why they feel the way they do, and they will more readily engage in making changes if they understand how these changes will help them. Symptoms tell a story of nutritional and emotional

challenges. Our role is to listen to the story and, together with the client, make the story coherent and actionable.

Avoid Shame During Assessment

Any illness or symptom can result in a sense of shame. This is especially so with a trauma history, alcohol/chemical dependency, obsessive-compulsive disorder (OCD) behaviors, body dysmorphic disorder, eating disorders including purging, and weight concerns. The client may not readily explore these elements of their history unless prompted. If I sense that a client would benefit from exploring these areas and they do not seem comfortable, I identify them as topics for future discussion. I may say, “I appreciate that it may be difficult to talk about this right now. Would you prefer if we focus on (name a less triggering topic) now, and later, we can revisit this?”

Because there is a high correlation between the experience of trauma in early life and substance use and eating disorders, I always educate the client about the role of affect dysregulation and the disruption of biochemistry by chronic stress—and the tools that exist to nourish the brain, mind, and body toward balance.

In response to a client who has bulimia and is an abuse survivor, I might say, “We know from clinical experience that most people who experience bulimia have histories of sexual abuse. While we don’t understand all of the interrelationships, we do understand that many of the behaviors are an effort to reestablish balance. Let’s explore what your behaviors tell us about what your body-mind needs to establish balance and a sense of well-being, and then we can explore what options are out there that may more effectively support your health.”

When discussing management and self-care behaviors, it is essential to avoid language or attitudes that may inadvertently add to the feelings of shame. This requires a matter-of-fact approach; there are numerous explanatory systems about mental health illness rooted in cultural, religious, and popular belief systems. Identifying what aligns with the client leads to healing rapport and the best results.

Shame is closely related to self-criticism and self-blame arising from affect dysregulation. Building compassion-based skills to address these issues early and as they arise will improve self-care and adherence behaviors and overall outcomes. Compassion therapy (Gilbert, 2009) applies mindfulness and reinforces and stimulates feelings of safeness,

warmth, and connectedness that lead to self-soothing. Because food, drugs, and medications are often central to these efforts, understanding the role they play will be essential to avoid engaging in shaming dialogue. Women with eating disorders who reduce shame and increase self-compassion have better treatment outcomes for eating disorders (Kelly et al., 2014). This suggests that when someone "falls off the wagon" with a particular protocol or regimen, we support them nonjudgmentally to identify what they need to return to their program—reframing shame-based statements is a crucial part of this process.

Sample Dialogues: Reframing Shame-Based Statements

Client 1: I need more willpower when it comes to donuts. I gobble them up if I see them on the break table at work. I have always been bad that way.
Therapist: Donuts have so much sugar and flour that they act like drugs. No wonder you and many people find it hard to turn down donuts. It is not about willpower. Let's strategize some nutritional support that will help you.
Client 2: I went to my friend's birthday party, and she offered me a platter. I ate two pastries and ruined everything I was working toward.
Therapist: You have not ruined everything you are working toward. You have had a brief setback, but nothing keeps you from your goals. It's hard to say no at a birthday party. Did you feel you would "stand out" or offend your host if you said no thank you?
Client 3: I have been depressed all my life and on meds since I was 11. I think this is the way I am. Something is wrong with me, and that's how it will be.
Therapist: I can appreciate that you feel despair at times. You have worked with great courage to restore your health, and I am confident in your success. I am thinking about the time you shared with me that you grew up very poor, and often went hungry, and that when you did eat, it was mainly cereal. In many ways, this set the stage for your body to crave alcohol and likely led to your body and brain not getting what you needed. You have come a long way in recovery. I know that we can work together to identify the foods and support you need to feel better,

and we will work together to determine that, and I will help you achieve that.

Initial Intake Form and Analysis

The following sections map the assessment, comprising the Korn Food/Mood Diary (Appendix B) and a client intake form (Appendix G). In what follows, I explain the meaning of the questions in the context of mental health nutrition and how answers may be understood and interpreted.

The assessment has several sections, and you will conduct it in several stages. The client can fill out the assessment and then review it in the office as a basis for discussion and amplification of answers. Like many assessments, they need not be reviewed in order and tailored to your client's present need and tolerance. There will be some parts to the assessment that may sometimes feel overwhelming to your client, in which case you can proceed slowly, as needed. It is also possible that a client will leave parts blank, in which case you can review the content verbally.

Discovering what works best for them in the context of the best available knowledge and shared decision-making empowers clients as change agents.

The Korn Food/Mood Diary and Clinician Checklist

The Korn Food/Mood Diary is a simple way to begin the assessment. It provides a 3-day window into food habits and patterns and how the client links mood and energy to food quality, quantity, and timing of intake. It provides the clinician with a quick visual of client nutrition and helps identify initial places to start the change process. I provide this handout (see Appendix B) before the first appointment. This allows me to assess possible areas for change before our first meeting and initial discussion. Then, we review it along with the complete intake (Appendix G) and prioritize goals for change. The Korn Food/Mood Diary may also initiate quick changes that significantly improve mood and energy, thus engaging hope and a positive attitude. Hence, one can engage in the change process even as the assessment continues. Occasionally, if a client finds it difficult emotionally to fill out the diary, you can explore this directly in the session.

As you sit with the client to review the Korn Food/Mood Diary, use the accompanying Clinician Checklist as a step-by-step approach to review each section. Use the interpretation and suggestions as initial steps/goals for the client toward well-being. When analyzing the Korn Food/Mood Diary, ask the client to follow along with a copy of the diary, which you will also have in hand. The client may then amplify their responses. Some clients feel impatient filling out diaries and only make notes. In this case, you can use these notes as prompts to clarify or deepen the answers provided.

Box 3.1 provides examples of the Korn Food/Mood Diary and Clinician Checklist I filled out with my client Joan, followed by a sample dialogue with review and analysis of the diary.

Box 3.1
Sample Korn Food/Mood Diary and Clinician Checklist

Korn Food/Mood Diary Name: _(Joan)_____Date:_(dd/mm/yy)_
Write down everything you eat and drink for three days, including all snacks, beverages, and water. Please include approximate amounts. In the right-hand column, describe energy, mood, or digestive responses associated with a meal/snack, within 2 hours of eating.
Time of waking: _6:30____a.m./p.m.

Meal	**Beverages**	**Energy Level** (↑,↓, or =)	**Mood** (↑,↓, or =)	**Digestive Response** (gas, bloating, gurgling, elimination, etc.)
Breakfast (Time: 7:00 a.m.) No breakfast	Coffee, creamer, 2 Equals	Good	Energy low around 9:30 a.m., starting to feel stress of the day	Pain in stomach
Snacks (Time: 9:30 a.m.) Danish pastry	Coffee, creamer, 2 Equals	Was low but then got better	Stressed about work deadlines	

Meal	**Beverages**	**Energy Level** (↑,↓, or =)	**Mood** (↑,↓, or =)	**Digestive Response** (gas, bloating, gurgling, elimination, etc.)
Lunch (Time: 1:00 p.m.) Salad bar, French dressing, wheat roll with butter, fruit cocktail	Diet coke Glass of water	Better during lunch, dreading afternoon	Good lunch with coworker	Gurgling and a little discomfort about an hour after lunch
Snacks (Time: 3:20 p.m.) 1 Reese's peanut butter cup	Coffee, creamer, Equal	Flagging, headache		
Dinner (Time: 7 p.m.) Lean Cuisine Pizza, applesauce	Iced tea	Exhausted	Tired and irritable	
Snacks (Time: 8:30 p.m.) Reese's peanut butter cup				

TABLE 3.1
Clinician Checklist for the Korn Food/Mood Diary

Question	**Answer/ Notes**	**Goals and Recommendations**
1. How much time passed between when the client awakens and when the client eats breakfast? Is the client eating breakfast?	3 hr, not eating breakfast	Breakfast should include at least 3–4 ounces of protein within 30–60 minutes of waking for proper energy and blood sugar balancing especially when under stress.
2. How much water/broth is the client drinking throughout the day?	3 coffees 2 diet cokes 1 ice tea 8 oz. water Joan = 180 lb/50%, needs at least 60–90 oz/day	Daily water intake should be about 50% of body weight in ounces (e.g., a person weighing 160 lb should be drinking 80 ounces of water daily).
3. How often is the client eating? How many hours	Is snacking but with sugary products not food	People with reactive hypoglycemia and mood swings benefit from

Question	Answer/ Notes	Goals and Recommendations
between each meal or snack?	per se; 6 hr between lunch and dinner	eating every 3–4 hours. Ideally eat at least 3 meals/day and 2 snacks.
4. How many servings of vegetables is the client eating per day?	1 salad	At least 6 servings of vegetables should be eaten every day. A serving equals ½ to 1 cup.
5. Is the client eating raw vegetables and fruits?	1 salad, maybe 1 apple/applesauce	At least 1–3 servings of raw fruit or vegetables should be eaten every day.
6. Is the client eating enough protein? Note if it is animal or plant protein. Note if lack of protein corresponds to drops in mood or low energy.	Very limited protein	Proteins help stabilize energy and balance mood and should be emphasized during the daytime hours. Animal protein has a full complement of amino acids. Plant proteins need to be carefully combined to achieve adequate amino acid levels.
7. Is the client eating enough fats? Note if lack of fats corresponds to mood shifts or lack of satiety.	Poor-quality fats	Fats help stabilize energy and balance mood and increase satiety. They should be raw or cold pressed.
8. How many servings of starchy carbohydrates is the client eating and at what times of day?	Throughout day: pastries, candy, roll/pizza	During the day starchy carbohydrates are best when combined with protein to stabilize blood sugar. Starchy carbohydrates alone can be emphasized in the evening for relaxation.
9. What is the quality of the food the client is eating (freshly prepared vs. canned or prepackaged foods)? Are there additives, dyes, and sugars added?	Poor-quality food	Recommend whole, fresh, organic foods instead of packaged and canned foods. Frozen vegetables and fruits are acceptable alternatives.
10. Is the client eating enough soluble fiber?	Some fiber: apples	Soluble fiber is found in foods like oat bran, nuts, beans, lentils, psyllium husk, peas, chia seeds, barley, and some fruits and vegetables. Eat at least 30+ grams a day

Question	Answer/ Notes	Goals and Recommendations
11. Is the client eating enough insoluble fiber?	Some found in grain sources	Insoluble fiber is found in wheat bran, corn, whole grains, oat bran, seeds and nuts, brown rice, flaxseed, and the skins of many fruits and vegetables.

During the review of the Korn Food/Mood Diary, you can identify basic dietary patterns and ask additional questions. This initial review also assesses the client's willingness to make certain changes within the context of the overall stages of change (see Chapter 9). With the completion of the Korn Food/Mood Diary, there is enough information to use motivational interviewing to begin assessing the stage of readiness and goal setting and start psychoeducation about nutrition as self-care (see Appendix B for printable versions of the Korn Food/Mood Diary for Clients and associated Clinician Checklist).

Sample Dialogues: The Korn Food/Mood Diary

Reviewing the Korn Food/Mood Diary

Clinician: Hi Joan, thank you for filling out this Korn Food/Mood Diary. I want to review it with you, and we may be able to discover some ways to improve your sense of well-being. One of the first things I noticed is that you don't eat breakfast. Is that because you're not hungry when you wake up?
Joan: Yeah, I don't have any appetite.
Clinician: I see that you drink coffee, and I notice that you have some stomach pain in the morning. Can you tell me about that?
Joan: I wake up with it every morning; I don't know if it is just stress, but it is a kind of pain and nausea.
Clinician: Does it get better or worse when you drink coffee?
Joan: It stays the same—maybe a little worse—but I need the energy, so I just put up with it. If it gets awful, I take an aspirin.
Clinician: Joan, I think that is a priority we can work on to help you feel better. Around 9:30, you had a pastry and another cup of coffee. One of the things you said here is that your energy level is a little low by 9:30, which is very common when we don't eat breakfast. Our

energy drops, and then we grab something to boost it. One of the things we'll talk about is how you can increase your energy by changing some of the foods you're eating and the times you eat. How does that sound to you?
Joan: That sounds good.
Clinician: It looks like you had a salad at lunchtime. Is this something you do every day, or was this unusual?
Joan: Yes, though sometimes I have a meat sandwich for lunch. Sometimes, I might have an apple instead of a fruit cocktail, but I like the sweetness of the fruit cocktail. It gives me a little energy. I had been drinking regular Coke but decided to switch to Diet Coke because I thought that was better for me.
Clinician: I can understand that. In general, sugary foods only give a short-term energy boost, and from what I see in your mood and energy sections later in the day, your energy drops again. Again, with a few simple changes, you will have more sustained energy throughout the day. One of the things I noticed is that you had a bit of discomfort after lunch.
Joan: Yeah, I always have cramping, and it's low down in my stomach.
Clinician: Do you mean your stomach or lower down in your belly where your intestines are? (Note: Point to the different locations of the abdomen as people often call their intestines their stomach.)
Joan: Oh, it is lower down than the stomach.
Clinician: Can you place your hands on the belly where you feel the pain?

Joan places her hands on her descending colon.

Clinician: Ok. We will talk about that in a bit. . . . This next area under mood is not filled in, but I noticed that your energy drops by the middle of the afternoon. What happens to your mood at that time?
Joan: I start to get depressed and bark at my office manager.
Clinician: Do you feel better after the coffee and Reese's peanut butter cup?
Joan: Well, I think so, maybe for an hour, but then I feel nauseous and still find it hard to get through the rest of the workday. I start to feel antsy.
Clinician: I notice that you eat dinner at about 7 p.m.—a Lean Cuisine pizza and applesauce. Is this a normal type of dinner for you and a

regular time?
Joan: Yes, I try to get something healthy to throw in the microwave. Applesauce is good for my constipation, though sometimes I get too loose.
Clinician: I notice that by this time you're really feeling exhausted, tired, and irritable. How are you feeling in your belly?
Joan: Well, one of the things I notice before I go to bed is that I have a hot pain coming up into my throat, mainly when I lie down. Sometimes it is so bad I take some Tums.
Clinician: Joan, I noticed that you have another peanut butter cup in the middle of the evening. Is that because you're hungry or you want something sweet?
Joan: Well, I feel like it settles my stomach. I'll be watching TV and . . . I don't know . . . it just tastes good. I feel a little lonely since my divorce. I know I shouldn't, but . . .
Clinician: I can imagine you have felt very lonely since your divorce and feeling crummy every day. As you have described here, it doesn't help either. We can help you feel better physically, which will help you get back on your feet. I do not doubt it, Joan. Is there anything else you want to tell me about your food diary before I share? You can make some nutritional changes that will help the depression, fatigue, stress, and pain we have been discussing.
Joan: Well, the only thing is that I like to cook, but I don't seem to have the time or energy after a day of work. Some of this isn't that great for me. I feel so overwhelmed and stressed most of the time that I can't take on any more.
Clinician: Yes, I can appreciate that. I am glad you like to cook. It would help if you did so even as you lead a busy professional life. I will have some suggestions for you so that you can do some more cooking. It will make a big difference in your energy and health, and I don't think it will take up too much of your time.

Dialogue Analysis and Recommendations

Clinician: I'd like to review some areas in this diet where we can find some initial improvement, and they won't be too difficult to implement. And I think I have some answers about why you feel like you do. If you undertake some initial changes, you will experience excellent

improvement in your energy and depression pretty quickly. I know that we are working on your feelings about the divorce and John leaving you and your sadness. We have talked about how those feelings are not going away quickly, but let's focus on some areas you can control now and discover how your diet is also affecting your mood and energy. Once we clear that up, then we will know a bit more about the best ways to focus on your sadness and depression. Shall we go through this together?

Joan: Yes.

Review goals and recommendations in the Clinician Checklist for Question 1.

Clinician: The first thing I notice is that when you wake up, you have some pain, but you also aren't very hungry. You drink coffee, but not until 9:30 do you put anything in your stomach. I want to work with you to eat something, even if it is small and simple, soon after you wake up. Is that doable for you?

Joan: Yes, I can try.

Clinician: Once you try it for a few weeks, I know you will get the results you want. Let's also focus on reducing the pain in your stomach; drinking coffee on an empty stomach can create excess acid. I suspect you may have some acid problems because what you describe at night when you feel that hot pain is also a sign of that. Things like a lot of coffee and starches can cause the symptoms you describe. And, even though you take aspirin for the pain, the aspirin makes it worse. So, it is essential never to drink coffee on an empty stomach. You might look into the low-acid coffees on the market, and once we get your energy boosted a bit, how would you feel about just having some coffee in the morning and passing on the afternoon cup? Would you think about that? . . . And, could you also tell me why you used a creamer and Equal?

Joan: I thought a creamer was better than cream, and Equal was better than sugar.

Clinician: Well, Joan, believe it or not, creamer and Equal can actually be worse for your health than cream and sugar. I want to recommend that you have some organic cream, and instead of Equal or sugar, would you be willing to try a natural sweetener, like honey or a few drops of stevia? There are a lot of additives in both of those products that can affect mood, and I want to rule out anything that can affect your mood.

Since you drink coffee at work, you could bring some organic cream and stevia and keep them at the office with you.
Joan: Yes, I could do that.
Clinician: Wonderful. From today onward, I want you to consider this mantra: "Food is medicine." This means all the food that goes into your body should be used to help you in some way. If it has no health value, then chuck it. So begin with a good low-acid coffee and cream; cream is better for you than milk. Focus on just two cups in the morning, and don't drink unless your belly has some food in it.

The next thing I notice is that when I review all the liquids, you're not getting too much liquid, and when you are, it is not ideal for your health. We know that dehydration can contribute to headaches and fatigue, and I'd like to rule out the possibility that this might affect you. Would you be willing to drink more water or herbal tea during the day?
Joan: Yes.
Clinician: You might purchase Rhodiola herb tea. It will give you a boost similar to coffee, but it won't make you wired or hurt your belly. I wouldn't drink it after 3 p.m., however. Let me know how you respond to it when I see you next week.

I notice that many of the liquids you're drinking are stimulants, which can affect your sleeping difficulties. I'd like us to work toward the goal of limiting the stimulants to earlier in the day; let's rely on foods and nutrients as we continue in our discussions to support your energy. Does that sound workable for you?
Joan: Well, I guess.
Clinician: We'll put that on the back burner for right now, but just know that I think that's the direction we'll go in. I promise you that you'll notice a big difference in how you feel. I'll work with you to find some good substitutions.

Review goals and recommendations in the Clinician Checklist for Question 2.
Clinician: One of the things I notice in your Korn Food/Mood Diary is that there is a lot of time in between some meals. For example, it is 5.5 hours or so between lunch and dinner, and the middle of the day is challenging for you. Your energy drops, your mood drops, and you have a headache. I'm wondering whether, instead of the Reese's peanut butter

cup, why not get a jar of almond butter, some crackers, maybe an apple, or a banana. I know you like chocolate also, so why not bring some organic cocoa powder to work? You can make a nice cup of hot cocoa, sweeten it with stevia, use some cream or almond milk, and enjoy the nut butter. You will still have the foods you like, but now they are medicinal and nutritious rather than making things worse. Does that sound like something you can do? Would you try this for the next week and then tell me how you feel? We can review that again. Would that work for you?

Joan: Yes, I have a stove and a fridge at work.

Clinician: Great. I have a few recipes for this that I will give you before you leave today. I am excited for you to make these changes, Joan.

Review goals and recommendations for Question 3.

Clinician: You eat a salad almost daily, which is excellent. Do you like vegetables?

Joan: Yes, but I don't have time to cook or prepare them.

Clinician: I can appreciate that. Well, let's put on our to-do list some recipes that you would enjoy, including some more quick-to-prepare vegetables. You might even try bringing some celery to work. Peanut butter goes really nicely with celery, and celery is known to reduce anxiety.

Review question 4.

Clinician: Joan, I noticed you're eating a fruit cocktail and some applesauce, which are full of sugar. Apples are a perfect fruit for you. I want to encourage you to choose apples instead of the fruit cocktail and applesauce because the sugar in both products exacerbates your symptoms. Research shows that sugar can cause inflammation in our bodies, and this contributes to depression. Again, I want to reduce all these dietary causes of your depression so we can focus on the life changes you want to make. Do you think that's feasible for you to do? Could you start that this week?

Joan: Yes, I could do that.

Clinician: I know we are reviewing a lot here, and I am making many suggestions. How are you feeling at this point? I don't want to overwhelm you, and we can stop here if you prefer.

Joan: No, this is great! It is giving me a lot of ideas. I didn't realize all of these things.

Clinician: Joan, I am convinced you would feel better if you ate more protein. Protein is responsible for brain chemicals that help us feel happy. What kinds of proteins do you like? For example, chicken, eggs, fish, beans, and meat . . .
Joan: Well, I like chicken, eggs, and tuna fish. Sometimes I eat a steak in a restaurant.
Clinician: Wonderful! We talked about you eating in the morning. Let's begin with an egg. Perhaps a soft-boiled or hard-boiled egg? However you like it. Even a light scramble with some butter would be fine. Some of my very busy clients, like you, boil eggs the night before and then carry a few to work. This would be ideal for you also. Also, add some chicken or salmon to your salad for lunch every day, and then have a little chicken or tuna for dinner. Think of the protein as energy for you. If you eat a little of it throughout the day, I guarantee your energy will be much more vital. If you start doing this tomorrow, you will feel differently when you come in next week. Can you commit to doing this 5 days a week to start?
Joan: Yes, I can. I am starting to feel excited about these changes.
Clinician: Joan, before we wrap up today, I want to discuss fats because they help stabilize your energy and mood. I notice that when you have salad, you have French dressing. Do they have olive oil at this restaurant? Do you like olive oil and vinegar or olive oil and lemon? You could check, and that would be a good change to make, and it would begin to get you the healthy fats . . .

I'm looking at these last few items on my checklist. One of the things we're going to focus on as we move down the road is making sure you get satisfying food and better-quality food. The better the quality of your food, the better your energy and mood. Remember your mantra: food is medicine. Since you like to cook, I have some healthy slow cooker recipes (see Appendix H.1) that require only 15 minutes so that they will fit your schedule. We can address that more next week but give that some thought. Let's review some of the changes you will explore this week. I will follow up by sending you an email later listing some of the changes we discussed. I will also include the names of two nutrients I'd like you to purchase to help reduce and eliminate the pain in your belly. If you can avoid taking aspirin, please do so.

Do you have any questions for me before we end? Let's recap the changes you agreed to make this week. We have identified some changes that will bring you the quickest and lasting results. I'm eager to hear how your week went when you come in next week.

Box 3.2
Integrating Motivational Interviewing

Motivational interviewing (MI) enhances a client's motivation and commitment to behavior change, particularly when experiencing ambivalence. As clinicians, we frequently turn to MI to better understand our clients' readiness to embrace life changes. While our clients are interested in changing, they often face ambivalence, consciously or unconsciously, that creates obstacles to progress. MI offers a powerful and effective approach, especially when facilitating nutritional changes. It focuses on intrinsic motivation and resolving ambivalence without imposing solutions and helps you get to know your client and build rapport, and by elucidating readiness, you can target your next-step interventions isomorphically. MI is client-centered and nondirective and sets the stage for more directive interventions like CBT and CBT for insomnia, providing avenues like homework and cognitive reframing to address shame-related nutritional and eating behaviors.

Goal Setting

The goal for the first and second assessment sessions is for the client to share their primary concerns and to elicit one or two goals. Additional goals may also emerge from the review of the Korn Food/Mood Diary, and the clinician can link the client's identified goals with the Korn Food/Mood Diary and overall assessment findings. Later, in Chapter 9, I review in depth additional motivational interviewing methods and the SMART method of goal setting.

Clients will leave with at least one action (and possibly several) they have agreed to undertake until you meet again.

Week 1 Goals for Joan

- Eat an egg for breakfast.
- Substitute cream for creamer.
- Use healthy fat extra (virgin olive oil) on salad.
- Add protein to lunch salad.
- Obtain low-acid coffee.

- Substitute apples instead of applesauce.
- Substitute peanut butter and chocolate and stevia for candy.
- Reduce aspirin use.

Week 2 Goals Revealed

- Reduce or eliminate soda pop.
- Increase the amount of water drinking.
- Buy a slow cooker to cook chicken.

Essential Outcomes for Client Education During the Food-Mood Assessment

1. The client knows more about the connections between their food intake, mood, and energy levels.
2. The client understands that a combination of protein, complex carbohydrates, and fats every few hours will sustain mood and energy.
3. The client understands that depression, pain, and anxiety result, in part, from inflammatory foods.
4. The client calculates a range of water/healthy fluid intake optimal for energy and well-being.
5. The client commits to one to three goals of nutritional behavior change during the first week.
6. The client has heard about some additional goals for the future weeks to consider.

Using the Intake Form

You can access Appendix G for the complete Client Intake Form that goes along with this section.

Blood Tests

I request the client upload blood test results obtained during the previous 3–6 months. At a minimum, I want to see Vitamin D, total cholesterol, HDL/LDL, triglycerides, fasting glucose, A1C, and omega-3 fatty acids, obtained via blood spot or draw. Following the intake, you may recommend additional tests.

Height/Weight Measures and Their Meanings

Some of the things that people worry about the most and that form the basis for nutritional or medical recommendations include what people weigh. This information can exacerbate obsessive-compulsive behavior and body dysmorphia, or can be useful for change. What matters is what it means to the individual, yet it can often be a source of shame.

If clients are obsessive about weight and BMI, consider exploring the hip-waist ratio as a more effective tool *if* they require a measure. Moreover, I emphasize condition and well-being, focusing on active choices that improve overall well-being with less focus on weight per se. If a client wants to measure and chart progress, a hip-waist ratio is a more accurate reading of *potential* health risk. However, I also remind my clients that nutrition for mental health is not about weight loss. It is about making informed choices that enhance emotional well-being (see Box 3.3).

Box 3.3
Hip-Waist Ratio

To accurately measure the hip-waist ratio, follow these steps:

Place a tape measure around your bare stomach above the upper hip bone. Ensure the measuring tape is parallel to the floor (slanting can falsely increase your measurement). Also, ensure the tape measure is snug to your body but not so tight that it compresses the skin. Exhale while measuring and relaxing your abdomen—sucking in is not allowed!

Using a tape measure, measure the circumference of your hips.

First, look in a mirror and identify the widest part of your buttocks. Then, place the tape measure at this location and measure around the circumference of your hips and buttocks. Using your waist circumference measurement, calculate your waist-to-hip ratio by dividing your waist circumference by your hip measurement. Divide the waist measurement by the hip measurement; a result above 0.9 for men or 0.85 for women indicates abdominal obesity and an elevated health risk.

Health Concerns

Understanding previous treatment and results, attitudes and experiences, benefits, connections, and mistreatment all inform our work as clinicians. I want to understand my clients' subjective experience and what they define as important. This section can explore their often unspoken concerns; whether my clients have felt heard, understood, and taken seriously, especially when they may have been told that their symptoms are

“psychosomatic” since that term can be used pejoratively instead of proactively.

Daily Activities

Understanding current levels of activity will inform possible issues of energy, inflammation, and pain linked to nutrition. It is also important to identify what people engage in and where they may enjoy activities and receive support to return to those activities.

Health History

A comprehensive health history is one of the most critical steps a clinician can integrate. Mental health symptoms give clues to physical problems, and physical difficulties also reflect emotional or cognitive issues. A health history is required to understand these relationships.

Surgeries give insight into a variety of factors. The removal of digestive organs can occur as a response to illness and, in turn, can lead to nutrient deficits. Appendicitis may reflect chronic intestinal problems; removing the gallbladder often worsens fat digestion. Bariatric surgeries create absorption problems, nutrient deficits, and are risk factors for depression and substance abuse. Thyroid surgery can affect metabolism and mood. Surgery for chronic pain conditions is always linked to the inflammatory process and often occurs with a history of early-life trauma. It also usually follows from or leads to prescription painkiller abuse, which in turn negatively affects one’s digestion and can exacerbate depression.

A history of elective surgeries may illuminate body dysmorphia, addictions, and a history of complex traumatic stress. Elective surgeries such as liposuction or cosmetic surgeries are highly correlated with histories of trauma (Korn, 2013, 2023a).

A thorough history of treatments tried and whether they have been successful or failed will also inform the choices people have made and what has worked or failed.

Trauma History

Posttraumatic stress, complex or developmental trauma, along with a history of concussions or traumatic brain injury, will be a determining force in how well we develop trust and rapport, define interventions and

adherence, and plan for outcomes. However, a trauma story involves sensitive, often upsetting information. The intake form allows people to write stories or discuss them in person. When people respond to a history of concussion or brain injury, it is essential to identify if they received treatment. The effects of brain injury can linger or emerge latently. Injury may co-occur with ADHD or cognitive impairment, and even years after the original exposure, someone will benefit from a thorough assessment. I address the evaluation and treatment of trauma comprehensively in my book *Rhythms of Recovery* (Korn, 2013, 2023a).

Exercise Activities

Physical activity and exercise are the third part of the triad of healing and recovery in mental health, along with nutrition and counseling. Understanding the role of exercise in self-care practices includes the three main types of movement: stretching, aerobic, and anaerobic (muscle strength exercises). Exercise also affects nutritional status, increasing needs, altering appetite, and increasing brain NTs and hormones. Exercise is vital to eliminating medications and improving mood; this is an excellent place to educate about that. Most people do better on their nutritional plans when they are exercising. The assessment may also provide information about obstacles or phobias about movement. People who are overexercising have special dietary requirements, and chronic overexercising may be a sign of an eating disorder.

Family Medical History

For a comprehensive assessment, I explore family history to identify and deconstruct belief systems about the hereditary or certainty of a disease process. Reviewing family history gives insight into family belief systems and behaviors and can be incorporated into exploring faulty beliefs. While there are some hereditary diseases and genetic vulnerabilities (like celiac disease), few are inevitable. Generally, most illnesses, both mental and physical, are lifestyle related and stress related, and even many genetic diseases are epigenetic. They are not necessarily inevitable but are “triggered” by environmental stressors that can be prevented or reduced in severity. Family medical history and treatment also shed light on family

beliefs related to the use of medications, fear of drugs, or other behaviors that will influence the client's choices.

Current Dietary Habits

Understanding current diets and the decisions and beliefs underlying those choices and behaviors is central to developing a nutritional plan. Clients may be open to new options or ironclad in their commitment to their diet. Often, the client follows a diet inappropriate for the specific biochemical individual needs, providing an opportunity to educate about areas for change.

Allergies and Sensitivities

In Chapter 5, I review in depth the role of food allergies and sensitivities and their contribution to mental illness. Here is where you might explore previous testing. People may know of allergies/sensitivities or may suspect them but have never been tested or conducted an elimination diet. The question about "foods that you could not give up" reveals potential obstacles to dietary change.

Current Food Preparation Methods

This section explores activities surrounding food gathering and preparation. Past and present practices will illuminate strengths and obstacles. People who have cooked in the past will more easily start again, while people who have not enjoyed cooking or are afraid of cooking will pose different challenges than those who have never learned but would like to. The answers in this section will guide the "cooking coaching" options outlined in Chapter 6.

Eating Behaviors

Mealtime and snack patterns may reveal if people are waiting too long between meals or have times of day when they eat more (e.g., night eating syndrome) and provide a way to explore what's working or not with the rhythm of nourishment.

Meaning of Food

This section may reveal the meaning of food in the client's life by beginning a discussion using the Korn Food/Mood Diary. Food means something to everyone, and people have a variety of associations. Understanding these associations will aid change or present barriers. The meaning of food is significant during the exploration of eating disorders or for a bariatric assessment. Explore food in the context of types of foods and their positive or negative associations with how clients use foods for energy, self-medication, relaxation, and in the context of early or current family life.

Sometimes clients live alone and do not prepare food for themselves or do not have time to cook. People may also need help answering this question. At this stage, there may be an opening to understand food-related behaviors and discuss the role of mindfulness and eating.

This is also a good stage in the intake to take a break and teach your client the mindfulness exercise discussed in Chapter 2.

Childhood History

Early dietary experiences can set the stage for childhood and adult physical and mental illness. These experiences can influence willingness and knowledge, which informs adherence and compliance. Understanding the types of foods an individual is used to eating and what foods they grew up on will reveal dietary habits that may be difficult to change.

For example, did the client's mother eat a diet rich in essential fatty acids? Was the client fed formula? Did they experience ear infections? How about the use of antibiotics? This history could expose the possibility of dairy sensitivity and microbiome imbalance.

Digestive Problems Currently, During Childhood, and the Teen Years

Did the client complain of stomach pains during childhood? Acne can be associated with food sensitivities to dairy. When did the symptoms of eating disorders begin? Were they resolved, or are they current, and how have the symptoms changed?

History of Fasting, Purging, or Bingeing/Purging

Fasting, purging, and bingeing provide insight into chronic or acute responses to stress and nutrient deficits. These practices reveal where to focus on healing. Someone who fasts for a day a week because they believe in the calorie restriction theory of longevity is assessed differently than a young woman who has decided to do a water fast for ten days to lose weight. Even purging, while not a commonly practiced behavior we see outside of pathology, has a long history as part of religious and health rituals worldwide. Thus, assess a client who discusses purging as part of their spiritual or consciousness practices in relation to the context and outcomes of these practices. Overall, while fasting, bingeing, and purging may be associated with eating disorders, when understood in context they may have different meanings. A history of chronic bingeing and purging can lead to nutritional deficiencies that need evaluation and likely lab testing.

History of Meals and Mealtime: Current and Past

This section will reveal potential strengths and obstacles to engaging in a program of self-nourishment. Was the client a “latchkey” kid? Did they cook for themselves and their brothers and sisters? Was there fighting at mealtime? Were foods prepared from packages or homemade, or were they particular types of meals? What about low-fat substitute use? Are they a practicing vegetarian? Is their diet based on religious or spiritual beliefs?

Medications: Current and Past Use

In mental health intakes, we collect information on psychotropic medicine use. However, in the integrative assessment, we collect information on all the medications a client is using, as well as herbal preparations, vitamins, and minerals. It is essential that all use of medications, including prescription, self-prescribed, and recreational or abused medications, be identified. Why is this important? Understanding current or past medications will inform what people have tried, how they responded, and if they had side effects. A history of extensive use of antibiotics and PPIs may signal gut dysfunction. Clients may be interested in reducing or tapering medications. Certain medications can cause nutrient deficiencies, which I explore in depth in Chapter 8. There can also be complex drug-nutrient-herb interactions. For example, fish oil is a mild blood thinner; if a client is already taking a blood thinner, it is essential to know the dose. Knowing the

complete medication list's contents may also prompt collaboration with the prescribing clinician. For example, you may feel that 3 grams fish oil is helpful for your client's depression, but they may already be taking a blood thinner. High-dose fish oil can help thin the blood and even reduce the dosage required for a blood thinner. Coordinate this recommendation with the prescriber.

Several approaches to improving mood stability involve nutrients that can lower blood sugar; clients with diabetes who may be on blood-sugar-lowering medications such as metformin or insulin will want to be advised of the potential effects of these helpful nutrients to prevent blood sugar from going too low.

Use of Nonpharmaceutical Substances

What and how people use medications or substances to self-medicate also gives insight into the options we will suggest. Some clients will begin by withdrawing from substances; others may have done so years before, and still others do not want to take any supplements. Some may present a list of 20 supplements they take and have significant beliefs and associations about their benefits. Still others have prescriptions from multiple clinicians. I call these "serial clients"; they will move from clinician to clinician without always following recommendations or have many at once and compare and contrast what each says. All of this will contribute to our understanding of how to coach clients and make recommendations.

With a list of all medications and substances, one can evaluate their interactions using an online database and explore potential nutrition deficits or dangerous interactions. Excellent databases are identified in the Resources section at the back of the book.

Use of Nutritional Supplements, Herbs, and Minerals

The primary purpose of this section is to identify whether someone is already using nutritional or herbal supplements and how they are using these substances. If the client is not taking supplements, that is as informative as the individual with a comprehensive plan underway. The source and quality of the nutrients are important since poor-quality supplements have fillers, additives, sugar, and food colors, so often the place to start is improving the quality of the supplements. Do they contain

folic acid instead of folate or cyanocobalamin instead of methylcobalamin? Who, if anyone, prescribed them? What are the dosages, and are they adequate or excessive? What is their potential for adverse interactions with medication? Assess their efficacy relative to current goals.

Detoxification

This section provides insight into the spectrum ranging from self-care to self-harm. It is essential to know what people are doing and why they are doing it. Detox fads make the rounds just as do dietary and food fads. Elsewhere, I have written extensively on detoxification and the scientific basis for its benefits (Korn, 2013, 2023a). There are significant benefits to detoxification when done correctly; however, some transient nutritional harm can result at times if done incorrectly or for long periods. I also want to understand if these behaviors are related to mental health or undue concerns about feeling dirty or unclean and integrate this understanding into our work toward health.

Pain and Discomfort

Assess pain levels by using the visual form and the visual analog. Pain provides insight into inflammation levels; it often co-occurs in depression, either as a co-occurring or a secondary result of living with pain (a hallmark of fibromyalgia). The potential to reduce pain may motivate a client to change their diet. This is accomplished by eliminating pro-inflammatory foods like sugar and increasing anti-inflammatory foods and nutrients. If pain is a primary concern, it can be the focus of initial dietary and supplement protocol.

Current and Previous Health Conditions

In this section, people may again consider the symptoms they experience.

Headaches

What types and how often do they occur, and what seems to trigger incidents? Gluten and food allergies and hormone fluctuations are major triggers, and the use of medications for headaches can cause digestive problems. Fatigue may signal nutrient deficiencies or signal chronic

stress/hypoglycemia. Infections and sinus symptoms may signify food allergies, especially to dairy.

Sleep Disturbances

Exploring past and current sleep patterns will be necessary since we focus on restoring circadian rhythm and chrononutrition. Restoring sleep should be a priority, for without sleep, a sense of well-being will remain out of reach. Exploring the number of hours, quality of sleep, number of times, and reasons for waking during the night, any diagnoses such as apnea, narcolepsy, nightmares, restless legs, and what year sleep disturbances began will all illuminate specific interventions. Assess this information in the context of current medications or use of stimulants (Ritalin, caffeine), which may affect sleep, and factor into long-term goals.

Skin Conditions

Chronic rashes and fungal infections may indicate high sugar consumption or low essential fatty acid levels. Skin conditions may also reflect allergies to dairy and wheat.

Allergies

Allergic reactions to scents, oils, lotions, and detergents may signal chemical sensitivity, reflecting chronic stress response and adrenal fatigue. Clients should be encouraged to eliminate these exposures.

Muscles and Joints

Somatic signs of stress signify inflammatory levels and food allergies; pain may point to inflammation and underlying depression, fibromyalgia, autoimmune disease, or cognitive symptoms. Such symptoms may indicate the need for dietary anti-inflammatories.

Nervous System

Head injuries, concussions, dizziness, ringing in ears, loss of memory, confusion, numbness, tingling, sciatica, shooting pain, chronic pain, depression, and other similar responses.

There are a range of implications for cognitive function and inflammatory processes in the body. Head injuries can contribute to chronic

headaches and fatigue, “brain fog,” and be a risk factor for depression and cognitive decline.

Respiratory and Cardiovascular Systems

These symptoms necessitate a referral or collaboration with the prescribing practitioner. Thiamine may increase blood pressure in people with low blood pressure. Supplemental fish oil can enhance circulation. Hyperventilation or disordered breathing occurs with anxiety.

Digestive and Elimination System

Identifying symptoms in this section will clarify digestion from “top to bottom.” Prioritize symptoms and address them with dietary and supplemental nutrients.

Endocrine System

Most answers in this area will alert the need for a referral.

Reproductive System

Reproductive organ symptoms are often associated with poor mental health either as a cause or reaction. Changing nutritional status creates significant improvements, especially in polycystic ovary syndrome (PCOS), endometriosis, PMS, and PMDD. History of cancer or current cancer will signal the need to collaborate with other clinicians.

Motivation for Making Changes

This section asks the client to name their motivation for change and explores areas and activities where they have previously been most successful, along with the challenges and obstacles they experience. This will provide insight into particular areas for focus.

Identify the differing needs within the current family, the history of cooking or trauma associated with cooking. What is currently working? What are the obstacles to change? (See the Motivation for Making Changes section at the end of the Client Intake Form in Appendix G.)

In Chapter 9, I address “putting it all together” and coaching for change.

Nutritional Changes

This section provides the basis for motivational interviewing and setting specific, measurable, achievable, relevant, and time-bound (SMART) goals. From this section, you will understand the client's stage of readiness, identify belief systems about change, and develop short- and long-term plans infused with enthusiasm and hope. It is helpful to periodically revisit this section, reminding the client of what they defined previously and allowing for changes as the program proceeds.

Perceived Barriers to Making Changes

Identifying potential obstacles during the intake process, based on what your client believes might hinder their desired change, allows for more effective planning. This proactive approach enables both you and your client to anticipate challenges and develop strategies to address them early on. Perceived barriers may include time, money, interpersonal barriers such as family members or friends, fears about change, or beliefs about the ability to change. Address these barriers throughout treatment as they arise.

Providing an open, welcoming opportunity to share anything the client feels is essential benefits rapport and trust.

After Initial Intake and Assessment

Once the intake is complete, the clinician will review it and analyze it in preparation for sharing results and ideas for prioritizing the next steps. It is essential to collect information about the financial resources a client has available to allocate to a nutritional and lifestyle program. Understanding the client's timeline for change is also helpful for gauging the rate of change to define during goal setting. Developing a report and defining change strategies are found in Chapter 9.

However, before any assessment is complete, there are additional factors to integrate into the analysis. Assessment of mental health and nutritional status is not a linear process. It is an ongoing process of integrating the many factors affecting how nutrition and dietary behaviors contribute to our client's well-being. Here, we transition away from the particulars of the individual to incorporate factors that intersect with nutrition that are essential to understanding the underlying causes of mental illness. In Chapter 4, I apply these factors to specific diagnoses, and in Chapter 7, I review treatment strategies.

Five Essential Mental Health Nutritional Factors to Assess in Everyone

Many similar damaging processes result in a variety of symptoms and different diagnoses. This requires that we assess five essential factors that underlie poor mental health, which are caused by inadequate nutrition and can be addressed by nutritional therapies. Next, I describe these factors, and in subsequent chapters, I describe the range of interventions that treat these five essential factors.

People come into the world with various strengths and challenges that can be genetic and result from in-utero and perinatal exposures. Early life patterns and life stressors can strengthen or exacerbate these genetic patterns. Not all genetic risks are necessarily evident or triggered. Environmental toxins and, most importantly, nutrition can activate dormant genetic responses for good or for ill. This is called *epigenetics*.

Consider what happens when a brand-new car is exposed to salt on the road every winter for several years. The original fine sheen begins to rust; at first, perhaps a small area on the fender, then it reaches the hood, until rust breaks through the metal floor and spreads. Your neighbor's car, however, is exposed to the same salt, but the rust doesn't seem so bad, or it starts near the hubcaps. Meanwhile, the tires on your car are wearing thin a bit sooner than your neighbors, even though they have the same mileage. Step by step, the systems required for the vehicle to function suffer; this depends upon the year of the car, its original quality, and its history—maybe it was mishandled in an accident at the factory, or perhaps your neighbor's car was garaged while yours was not. These many variables, combined with the care or neglect and the various types of exposures, will determine the unique ways the car begins to break down. The human mind and body are not so different.

These five essential factors directly influence mental health and must be assessed in the context of each individual's specific responses.

Assess These Five Essential Mental Health Nutritional Factors

1. Chrononutrition imbalance
2. Blood sugar handling and functional hypoglycemia
3. Inflammation, oxidative stress, and mitochondrial function
4. Food allergies and sensitivities

5. Methylation: conversion of folates/folic acid (B-9) to L-methylfolate

Essential Factor 1: Assess Circadian Rhythm and Chrononutrition Imbalance

Assess for chrononutrition imbalance. Chrononutrition refers to the dynamic relationship between the timing of food intake and nutrient deficits; the total of these effects on circadian rhythm underlies mental health. As with other conditions, diet supplementation and food behaviors can rebalance circadian rhythm and thus contribute to improved mental health.

The brain has a clock entrained to the great “clock” of daytime and nighttime, the light and dark circadian rhythm. This master clock then regulates other smaller clocks in the body that in turn regulate digestion, glucose handling, and hunger. Mood disorders occur when the “brain clock” is out of sync with the master clock of light and dark, which dysregulates the smaller clocks. Thus, to reset these clocks so they are all synced, we use being awake, sleep, light and dark therapies, and nutritional therapies that help move the “hands” of the clock backward or forward. These imbalances are seen in insomnia, hypersomnia, or where one wakes too early as in “phase advance” or goes to sleep too late, called “phase delayed.”

Circadian rhythm significantly influences depression, anxiety, PTSD, chronic pain (fibromyalgia), menstrual problems, OCD, bipolar disorder, eating disorders, and insomnia. Medications, nutrients, and light exposure can all adversely or beneficially affect the sleep-wake cycle and mood. Early-morning waking, morning depression, chronic sleeping in late, awakening with exhaustion, feeling wired at night, and using medication to sleep are all signs of circadian rhythm disruption.

Stress alters the circadian rhythm and cortisol levels, which affect sleep, wakefulness, and fatigue. Excess cortisol can reduce sleep quality and duration, and circadian rhythm governs the rise and fall of beta-amyloid production, which is implicated in the development of Alzheimer’s disease. Sleep deprivation is a risk factor for the development of dementia (Han et al., 2024). Night shift workers are more vulnerable to stress-related illnesses, including depression and anxiety (Bara & Arber, 2009) and cancer (Schernhammer et al., 2023).

1. *Review the sleep-wake cycle.*
2. *Twenty-four-hour salivary cortisol test:* This at-home test measures how well one adapts to stress and reflects perturbations in the hypothalamic-adrenal-pituitary (HPA) axis by assessing cortisol at four data points in ratio to dehydroepiandrosterone (DHEA). Cortisol follows a circadian rhythm and provides insight into the relationship between stress, adrenal function, sugar-handling function, and the sleep-wake cycle. The results of this test give a view into the current biological stress response that can guide interventions that focus on acute stress versus chronic stress response.
3. *Automated Morningness-Eveningness Questionnaire* (AutoMEQ)*:* This 19-question assessment provides information about sleep habits and your circadian rhythm type (see Center for Environmental Therapeutics, under Assessments, Testing, and Lab Tests in the Resources section at the back of the book).

Essential Factor 2: Assess Blood Sugar

Assess blood sugar handling and eliminate functional (reactive) hypoglycemia. Among the most essential functions to assess are blood sugar handling, functional hypoglycemia, and hyperglycemia/diabetes. Most everyone with mood lability has poor glucose handling. We will understand more about the factors contributing to mood lability if we evaluate blood sugar handling. Labile and low blood sugar (hypoglycemia) causes significant mood lability that can appear to be anxiety, bipolar disorder, irritability, ADHD, or affective dysregulation. Chronic stress gives rise to hypoglycemia, which in turn leads to or exacerbates these many symptoms. Blood sugar levels are also intimately related to circadian rhythm and adrenal function, so people with chronic stress often have reactive hypoglycemia, which can develop into type 2 diabetes. The role of blood glucose and its effect on mental function has been a focus over the last 30 years with the rise of type 2 diabetes and mood lability in children and adults alike. What occurs in the body occurs in the brain. The term “diabetes type 3” (González et al., 2022) reflects the new understanding that Alzheimer’s disease is a type of diabetes of the brain resulting from chronic stress and diets high in refined carbohydrates.

Assessment Essentials: Blood Sugar Handling and Hypoglycemia

1. Identify the daily use of refined carbohydrates and sugars, low protein intake, long periods between meals or using refined carbohydrates every few hours to sustain energy, and periods of sleepiness during the day. These are all signs of functional hypoglycemia.
2. Review the Korn Food/Mood Diary, especially Questions 1, 3, 6, 8, and 10, to assess for functional or reactive hypoglycemia.
3. Review the following checklist of significant symptoms of hypoglycemia and poor blood sugar handling:
    - Dizziness
    - Feeling shaky
    - Confusion
    - Hunger
    - Agitation
    - Crying
    - Headache
    - Irritability
    - Rage
    - Tired
    - Inability to focus
    - Pounding heart; racing pulse

Following the hypoglycemic diet for one week (see Appendix A for Guidelines for a Hypoglycemic Diet) is also a "rule-out" method. People with functional symptoms will feel much better when following this diet.

Essential Factor 3: Assess Gluten and Casein

Assess for gluten, casein, and food sensitivities and allergies. Celiac disease, nonceliac gluten sensitivity, and casein sensitivity are all important factors in mental illness. Significant clinical evidence has established casein and gluten sensitivity in people with mood disorders, anxiety, major depression, and schizophrenia (Cascella et al., 2011, 2017; Samaroo et al., 2010; Slim et al., 2018). People with bipolar disorder (Dickerson et al., 2012), OCD, autism, ADHD, and eating disorders are often reactive to gluten and casein (Ulaş et al., 2022). Gluten is the protein in certain grains (wheat, barley, and rye) that causes grains to "glue" together. Gliadins are

proteins that are components of gluten. Celiac disease affects about 1 in 250 people and is an autoimmune disease that manifests in severe digestive and frequently neurological symptoms. Nonceliac gluten sensitivity is an immune response leading to digestive and neurological problems (Cárdenas-Torres et al., 2021; Jackson et al., 2012) but may not manifest in digestive distress and thus go undiagnosed.

Casein is the protein found in dairy milk products. Both gluten and casein contain proteins to which people may be either allergic or sensitive. About 50% of people sensitive to gluten are sensitive to casein. This is called “cross-reactivity.”

Assessment Essentials: Gluten/Casein

There are two basic approaches to assessment: the elimination diet and blood and salivary tests. Test for celiac disease and the various antibodies to gliadin and other gluten proteins. As a first step, start an elimination diet.

There are different tests for nonceliac gluten sensitivity; one assesses blood and the other saliva. Comprehensive testing should include testing for antibody production to a variety of proteins, enzymes, and peptides, including transglutaminase, deamidated gliadin, glutenin, gluteomorphins wheat germ agglutinin, and foods that are cross-reactive to gluten.

Adherence to a gluten and casein-free diet is challenging for many people, especially children. Thus, it is essential to conduct highly sensitive testing. New tests are available for both urine and serum and immune system testing, including peptides, which act as undigested proteins contributing to gastrointestinal, neurological, and neurodevelopmental disorders. These neuropeptides, called casomorphins and gluteomorphins, act like opiates in the brain; they affect cognitive function, speech, and auditory integration and decrease the ability to feel pain. For example, bingeing associated with bulimia is associated with bread craving and gluten sensitivity, which releases opioid peptides, accounting for the bingeing/withdrawal response to grains, especially wheat (Bressan & Kramer, 2016). Cravings for wheat and grains are often associated with mood elevation upon eating these foods.

Celiac disease: The standard test is called the tissue transglutaminase antibodies (tTG-IgA) blood test for antibodies to gluten.

Gluten/casein intolerance: Tests that can assess reactivity to gluten proteins where clients have persistent symptoms and reactivity to gluten where previous testing is inconclusive. Some labs conduct highly specific tests that analyze up to 24 possible substances that affect digestive, immunological, and brain health, including gluten/casein intolerance (Cyrex Laboratory test arrays 3x and 4).

Urinary/serum peptide tests: The gluten/casein peptides test determines the effects of sensitivities to the opiate-like peptides in response to gluten or casein, even if an individual has no IgE or IgG allergic reactions (Mosaic Diagnostics, Cyrex).

Assessment With the Elimination Diet

It is not always practical due to financial resources to undergo blood or salivary testing. In this case, a diet that eliminates all exposure to gluten and casein should be followed. Many foods contain gluten, not just bread products; the elimination diet must be exact. I recommend eliminating gluten first. It requires at least 4–12 weeks to experience the effects (see Section I.1 in Appendix I for a comprehensive list of gluten-containing foods). Following the gluten elimination diet, I recommend the casein (dairy) elimination diet since gluten and casein can cross-react.

Essential Factor 4: Assess Inflammation

Assess inflammation, oxidative stress, and mitochondrial energy. Oxidative stress occurs as a function of living, hence, some oxidative stress and mitochondrial dysfunction are expected during the aging process. One theory of aging is the rate at which one “rusts.” Oxidative stress is like a rusting car: over time, if the rusting continues, it affects the engine that fires up the car (the mitochondria inside the cells), which then cannot convert nutrients into energy. The mitochondrial damage that results is present in depression (Khan et al., 2023), bipolar disorder (Lam et al., 2023), Alzheimer’s disease, schizophrenia (Jou et al., 2009), chronic fatigue (Holden et al., 2020), and fibromyalgia. Chronic alcohol and drug use and poor-quality diet add to oxidative stress. Chronic stress damages mitochondrial function in response to chronically high glucose levels (Picard et al., 2014), which in turn leads to systemic inflammation, neuronal damage, and cell death.

Foundational Inflammatory Markers in Blood Tests

- Homocysteine (standard blood test) norm below 9
- High-sensitivity C-reactive protein (hs-CRP) norm under 0.55 mg/L in men and 1.0 mg/L in women (standard blood test)
- Fibrinogen 200–300 mg/dL (standard blood test)
- *NutrEval* to assess markers for mitochondrial function including Kreb's cycle intermediates, lactate and pyruvate, amino acids, and oxidative stress markers (Genova)
- *MitoSwab*™, a buccal swab test to analyze mitochondrial function by measuring the activity of the mitochondrial electron transport chain complex

Additional Inflammation Testing

In addition to the mental health symptoms I have discussed earlier, pain, heat, or inflammation around joints, along with cataracts and heart disease, is a sign of inflammation. Oxidative stress precedes neurological diseases, and mitochondrial energy failure occurs in fibromyalgia and chronic fatigue. Noninvasive salivary tests to assess mitochondrial function are arriving on the market.

Telomere testing: Telomeres are genetic material at the end of each chromosome. Their primary function is to prevent chromosomal "fraying." Think of the plastic tip at the end of a shoelace that keeps the shoelace from unraveling. It is usual for telomeres to shorten over time with age, leading to cell death. The oxidative stress hastens this death just like rock salt hastens the rust buildup on a car in New York City, in contrast to the same vehicle with no salt garaged in Arizona. Various stressors appear to cause telomere damage, including overconsumption of sugar and chronic stress in early life (Mitchell et al., 2014). Telomere length seems to be influenced positively by the intake of antioxidants that combat oxidative stress (Canudas et al., 2020; Shen et al., 2009). Testing telomeres can reveal the effects of oxidative stress on DNA (SpectraCell Laboratories and Life Length Labs) (see the Resources section at the back of the book).

Essential Factor 5: Assess Methylation

Approximately 40% of individuals carry one or more single nucleotide polymorphisms (SNPs) in the gene for the enzyme *MTHFR* (5,10-

methylenetetrahydrofolate reductase), which can reduce the efficiency of converting folate (from food or its synthetic form, folic acid) into its active form, L-methylfolate (5-methyltetrahydrofolate or 5-MTHF). The enzyme *MTHFR* plays a critical role in the folate cycle by converting folic acid and dietary folate into 5-MTHF, the bioactive form required for proper methylation processes, including DNA synthesis and repair. This processing deficiency is quite common among patients with depression (Rush et al., 2006; Stengler, 2021), and up to 70% of patients with depression test positive for the inability to convert folic acid into L-methylfolate. This renders folic acid in Vitamin B supplements and enriched foods ineffective for this group of patients, leading to problems in the "methylation pathway."

Methylation is a foundational biochemical process in which a methyl group ($–CH_3$) is added to molecules like DNA, proteins, or fats, affecting their physical and mental health function.

Vitamin B-9 (folate), B-12, and B-6 (pyridoxal 5'-phosphate) provide the methyl groups needed for methylation reactions. Choline, methionine, and betaine also contribute to the methylation process, which affects epigenetics, turns genes "on" and "off," cell repair, and detoxifies. Methylation is involved in creatine production and, therefore, musculoskeletal health.

Defects in methylation conversion pathways set the stage for various symptoms due to the body's inability to metabolize specific vitamins and NTs like dopamine, which are necessary for physical and mental health. One of the signs of folate (and Vitamin B-12) deficiency and a possible *MTHFR* mutation is elevated homocysteine levels, a risk factor for depression, heart disease, and cognitive decline.

Methylation Pathway

Different nutrients increase or decrease methylation. Methylation pathway problems contribute to high homocysteine levels, which are a marker for both heart disease and depression. The methylation pathway is also responsible for synthesizing coenzyme Q10 (CoQ10) in the body. Mitochondrial energy production requires CoQ10. Fibromyalgia and chronic fatigue are two signs of methylation dysfunction that benefit from B vitamins.

The body must convert folate into a usable form. Folate (Vitamin B-9) is found in plant foods, such as spinach, or in the synthetic form called folic

acid, which is found in multivitamins and in “enriched” flour or other processed foods. Folic acid or folate is routinely administered to pregnant women to prevent neural tube defects. There is a correlation between low levels of folate and poor response to SSRIs, which has led to folate/folic acid supplementation to improve the efficacy of SSRIs. Diets high in folate, such as traditional Asian diets, are linked with lower lifetime rates of depression (Bekdash, 2024; Korn, 2013, 2023a).

Assessment Essentials for Methylation

High homocysteine levels indicate that the methylation process is inadequate. Obtain homocysteine level through a blood test. *MTHFR* polymorphisms are often though not the only cause of poor methylation and elevated homocysteine.

MTHFR SNP and *COMT (catechol-o-methyltransferase):* It is practical to test for both *MTHFR SNP* and *COMT* at the same time (Kashi Labs, Life Extension).

Methylation panel: Methylation metabolites and genetic predisposition can more precisely guide decisions about supplementation where methylation imbalance is suspected (Genova).

Lab tests: Completion of the history and specialized assessments will also lead to a discussion of further testing that may involve lab tests. Some people want lab work immediately, and others may not due to affordability. Discuss the costs and benefits of testing with the client. Even without lab tests, clients can experience significant improvement in their health. I will suggest to a client that we explore laboratory testing if they do not experience results after 3–6 months of dietary and nutrient changes.

Genomic Testing

In addition to testing for *MTHFR*, *COMT*, and *APOE* are basic genomic tests that provide actionable information for dietary and nutritional intervention, leading to improved mental and cognitive function.

Catechol-O-methyltransferase (*COMT*) is an enzyme that metabolizes catecholamines, including dopamine, epinephrine, and norepinephrine. It is responsible for breaking down these NTs and regulating their levels. The *COMT* gene makes the *COMT* enzyme, and variations in the gene affect the enzyme’s activity. Variations (polymorphisms) in the *COMT* gene, which influence psychological and cognitive effects, have led to the classification of individuals as either “Worriers” or “Warriors.”

Individuals with lower *COMT* activity have higher levels of dopamine, leading to better executive function and working memory but higher stress, anxiety, and worry. These clients will be susceptible to stimulants used for ADHD and caffeine, exacerbating anxiety or insomnia.

Individuals with higher *COMT* activity tend to break down dopamine more quickly, leading to lower levels and high-stress resilience, hence the warrior. Medication sensitivities may include a higher risk of side effects such as extrapyramidal symptoms when using antipsychotics, suggesting lower doses apply.

Nutrition for MTHFR and COMT Polymorphisms

Individuals with *MTHFR* and *COMT* variants benefit from increased doses of methylfolate, methyl B-12, Vitamin B-6 (pyridoxal 5'-phosphate), and magnesium. Individuals with low *COMT* activity benefit from supplementing with trimethylglycine and low-dose (5–10 mg) lithium orotate. S-adenosyl-L-methionine (SAM) may also be used at a low dose if results do not accrue. However, do not supplement SAM unless you obtain a *COMT* test, as it can worsen depression and mood disorders in people who have elevated *COMT* activity. People with sluggish detoxification may also benefit from liposomal glutathione or N-acetylcysteine (NAC).

APOE Test

Apolipoprotein E (APOE) is a protein that clears plaque from the brain. The *APOE* gene is involved in the body's cholesterol transport and lipid metabolism in the brain and body. There are three types of APOE proteins, APOE2, APOE3, and APOE4, and two possible gene alleles for each person, resulting in a combination of genes that exert a neutral, reduced, or enhanced influence on the risk of developing Alzheimer's and heart disease. The *APOE4* allele confers greater risk.

Collecting a mucosal salivary swab is required for this test. Many clinicians suggest conducting this test anonymously to avoid a record of genetic codes that may influence obtaining long-term care insurance should you possess either one or both copies of *APOE4* alleles.

Before conducting the test, it is wise to discuss with your client what the test results will suggest, including the meaning of the risk, the meaning of the test to the client, their hopes and fears, and what steps they want to take if they have one or both *APOE4* alleles.

Pharmacogenomic Testing

Pharmacogenomic testing (PGX) collects a saliva sample to analyze a client's response, based on their genetics, to psychotropic medication (offered, e.g., by Kashi Clinical Laboratory, Genomind). The results of the test personalize interventions and prevent adverse effects. Conduct this test before initiating psychotropic pharmaceutical interventions. It is essential to include testing for pain medications since one may require pain medications at some point in life. Genetic variants reveal the rate of drug metabolism, ranging from poor to ultrarapid metabolizers, which defines the degree of drug response and potential side effects.

Consider also pharmacogenomic testing for psychedelic medicine. Emerging research confirms that people respond differently to psychedelic medicine based on their genetic variations in metabolism and NT receptors. As psychedelic medicine for mental health becomes mainstream, testing can identify more precisely what may be of optimal benefit. Genetic variations in enzymes like cytochrome P450 (CYP), such as CYP2D6 and CYP3A4, influence how some psychedelics are metabolized. For instance, CYP2D6 metabolizes MDMA, so genetic variations in this protein could affect its efficacy or increase the risk of side effects. Psychedelics like psilocybin, LSD, ayahuasca, and, to some extent, ibogaine primarily act on serotonin (5-HT) receptors, particularly the 5-HT2A receptor. Genetic variations in serotonin receptor genes, such as *HTR2A*, may influence the intensity of the psychedelic experience and impact the therapeutic dose required. Polymorphisms in the serotonin transporter gene *SLC6A4* could also affect how individuals respond to psychedelics, potentially altering mood regulation and the emotional experience during therapy. Additionally, genetic variations in monoamine enzymes like MAO-A and MAO-B, which are responsible for breaking down monoamines like serotonin, can influence responses to ayahuasca, as these enzymes metabolize the psychoactive components of the brew.

For ibogaine, used to treat opiate addiction, variations in the *GRIN2B* gene, which encodes a subunit of the NMDA receptor involved in glutamate signaling and neuroplasticity, may affect individual responses, particularly in cognitive and therapeutic outcomes.

Diagnostic and Symptom-Specific Assessments

After reviewing and analyzing the overall assessment, incorporate symptom-specific assessments. In the following section, I address eating disorders and bariatric surgery because so many people seek help with eating issues and because eligibility for bariatric surgery requires a psychological assessment. In Chapter 4, I continue exploring nutrition and the contribution of nutrient deficits to specific diagnostic categories.

Eating Disorders

People come for counseling and nutritional therapies to talk about chronic or acute eating disorders or for bariatric surgery evaluation. Frequently, a discussion of food behaviors surfaces during the treatment of depression, anxiety, or PTSD when self-care habits are associated with a sense of helplessness. To obtain bariatric surgery, a client requires a psychological review. A clinician who understands mental health nutrition can be a vital resource to the client before, during, and after surgery.

Anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED) affect all ethnicities in the United States. Latinos and African Americans tend to have higher rates of BN. Bariatric surgery patients have a 27% lifetime prevalence of BED (Brode & Mitchell, 2019; Herrin & Larkin, 2013). There is a high rate of eating disorders among women and men who were victimized in childhood or experienced trauma (Guillaume et al., 2016; Korn, 2013, 2023a). There are elevated levels of anxiety and depression among bariatric surgery candidates and higher rates of mental disorders among the obese and then even higher rates of mental disorders in obese people who seek bariatric surgery (Mitchell & de Zwaan, 2011). Bisexual and gay men have a higher risk for eating disorders with as many as 15% (Herrin & Larkin, 2013). Eating disorders are highly comorbid with obsessive-compulsive disorder, and the nutritional treatment is very similar. Balancing serotonin levels is central to the range of symptoms that occur along the eating disorders continuum.

Eating disorders reflect complex psychobiological stressors, efforts to regulate affect through food and food behaviors, and complex nutritional imbalances. Eating disorders often have a dissociative and obsessive-compulsive component. At a more significant social level are the influences of pressure and advertisements on children and adults of what constitutes a perfect body and how food or lack thereof may achieve that. Eating disorders may co-occur with orthorexia, which I explain in Chapter 5.

Eating disorders, in general, are linked to dissociation and alternate states of consciousness achieved through food types and bingeing/fasting/purging activities. Bulimia and purging are anxiolytic behaviors. For example, purging activates vagal response. If you have ever thrown up, you know that afterward you are exhausted and often fall asleep. People generally use carbohydrates as their food of choice in bulimia, though they can choose fatty foods as well. These foods alter mood by way of the serotonergic and endogenous opioid systems, and they also lead to a sense of fullness.

People who frequently fast and purge may also engage in intensive exercise. Or, as regulation of food intake becomes more balanced, intensive exercise can increase. These behaviors alter consciousness by inducing an endorphin response, which reduces anxiety, but it can also exacerbate dissociative symptoms. Foods themselves have psychoactive components, enhanced when there are allergies or sensitivities, for example, to the opiate-like chemistry of gluten and casein that affects many people with eating disorders.

Bulimia Nervosa (BN)

BN includes impulsive and secretive behaviors, as well as mood lability (Herrin & Larkin, 2013). People with a history of trauma have higher rates of BN. The difference between BN and BED is that people with bulimia will compensate for the binge by self-induced vomiting or other measures like exercising excessively, restricting their food intake, or excessive intake of diuretics and laxatives (Herrin & Larkin, 2013). People who binge on refined carbohydrates or fats and have lower protein levels, tend to be more depressed and anxious, and have an evening chronotype, with bingeing occurring later in the day (Plano et al., 2022).

Purging Behaviors

AN and BN behaviors both may include purging and extreme use of laxatives, which upset the digestive process and also the health balance of intestinal flora. Chronic purging can be dangerous and lead to nutritional deficits, GERD, and even death. Most eating disorder treatment approaches have a goal of eliminating purging behaviors, including self-induced vomiting. However, not all purging behavior is harmful; assessing the meaning and frequency will contextualize this behavior. Historically, humans (and other animals) have engaged in these ritualized behaviors

across cultures. Thus, understanding the spectrum of these behaviors, ranging from adaptive and healthy to maladaptive and leading to self-harm and, in particular, the cultural context, will be valuable.

Binge Eating Disorders (BED)

BED may include grazing patterns where people eat small amounts of food throughout the day. Compulsive eating is similar to grazing in that eating may continue for hours; there is a tendency to repeatedly reach for food, feel overfull and out of control, and become preoccupied with eating. It is not uncommon that individuals with BED and BN have blood sugar imbalances related to excessive starchy carbohydrate intake and insulin resistance. These are primarily associated with cravings for these kinds of foods. They will never feel satisfied as long as they continue consuming refined carbohydrates. Grazing patterns can be interrupted or reframed when applied to hypoglycemia.

Emotional Eating

Emotional eating occurs to regulate stress, boredom, or other uncomfortable emotions. Comfort foods, often fast foods, are part of emotional eating—usually high carbohydrate or high fat because both increase relaxation. Emotional eating is associated with poorer quality foods, excess weight, lower fiber intake, and higher sodium and saturated fat intake (Betancourt-Núñez et al., 2022).

Night Eating Syndrome

Night eating syndrome is distinguished from BN and BED by the timing of food intake and that food is eaten in small, repeated snacks rather than true binges (O'Reardon et al., 2005). Upward of 25% of total calories are consumed after dinner. It also does not include purging behaviors. Whether it is an actual eating disorder remains controversial.

Anorexia Nervosa (AN)

AN is a disorder of starvation that leads to malnutrition and often death. When addressing nutritional support for AN, it is essential to distinguish between pre-AN deficits and the nutritional biochemistry arising out of long-term AN behaviors and nutrient losses. Thus, a history alongside testing will reveal current nutritional status. Common nutritional deficits are low levels of zinc and potassium. Supplementation with zinc can be helpful, though not sufficient. Adding low-dose ketamine to target the N-methyl-D-aspartate (NMDA) (glutamate) receptors, the primary excitatory

neurotransmitter with ketamine, shows promise (Hermens et al., 2020; J. S. Mitchell et al., 2023). Hormonal disruption, amenorrhea, and osteoporosis are also significant complications. Epling and colleagues (1983) suggest that the concept of "activity anorexia," which co-occurs at a high rate with AN, is characterized by an increase in exercise in response to a decrease in food intake that can lead to starvation and death. This suggests the need to include an exercise and food history during the assessment process.

Avoidant/Restrictive Food Intake Disorder

Known also as a selective eating disorder (SED), avoidant/restrictive food intake disorder is an eating disorder that prevents the consumption of certain foods and often begins in childhood. It is not related to weight or body image concerns. It is common in those on the autism spectrum but not limited to ASD and appears heritable to some degree (Keski-Rahkonen & Ruusunen, 2023). Personalized plans that address food quality and sensory experiences, including texture and agreed-upon rituals, are required.

Assessment Essentials for Eating Disorders

Blood tests include the following:

- Food sensitivities testing
- Nutrient status tests
- Salivary test

Night eating syndrome (NES) questionnaire: A score of 30 is a clinically relevant cutoff and could apply as one screen for bariatric surgery (Mitchell & de Zwann, 2011, p. 44). NES history and inventory are available from Allison et al. (2008).

Eating Attitudes Test 26: This test can be used for education and screening. A score of 20 or greater implies the need for further assessment (https://www.eat-26.com/).

Zinc taste test: The zinc taste test is a straightforward method to assess functional zinc deficiency, often seen in eating disorders. To perform the test, take a teaspoon of liquid zinc (refer to the Resources section at the back of the book). The taste you perceive will vary depending on your body's zinc levels. If zinc-deficient, the liquid will taste like water; if your zinc levels are sufficient, it will taste bitter.

Cortisol test (24-hour salivary) to evaluate HPA axis function (Diagnos Techs, Life Extension).

Amino acid levels testing (urinary and blood) (Mosaic Diagnostics, Genova).

Hair tissue mineral analysis (HTMA) uses hair to measure the mineral content of hair (Trace Elements).

The Bariatric Client

Bariatric gastric bypass surgery restricts food intake, making ingesting large amounts difficult. However, its efficacy depends on altering the appetite to decrease hunger and increase satiety, not the food restriction itself. Predicting who will successfully lose weight and maintain weight loss in those who undergo this surgery is complex, and recent research identifies genetically based variations affecting success (Hatoum et al., 2013), as well as factors such as the age of obesity onset and age at the time of surgery. Clients who are both obese or morbidly obese (and who may or may not have type 2 diabetes) may be advised by a health professional to undergo bariatric surgery, or a client may raise the option of surgery with us during treatment. There are three major types of surgical weight-loss procedures: (1) the laparoscopic adjustable gastric band, (2) the Roux-en-Y gastric bypass, and (3) the sleeve gastrectomy (Mitchell & de Zwaan, 2011). They range from reversible to permanent procedures. The lap band reduces the stomach size by sectioning off a portion with an adjustable (and reversible) gastric band. A gastric bypass surgically reroutes food to the lower intestine.

There is a high rate of complications postsurgery and during the years that follow, requiring specialized and ongoing management. Furthermore, a range of studies demonstrate significant weight gain in 50% of individuals within 2–5 years following surgery. For some people, the surgeries are very successful and lead to improvement or elimination of Type 2 diabetes and sleep apnea, and for others, they are less successful. Malabsorption of macronutrients is more common in these combination procedures.

A psychological assessment is required before a client is accepted for bariatric surgery. Most people consider bariatric surgery after many years of attempted weight loss. Here, the Edmonton Obesity staging system (Swaleh et al., 2021) may be helpful.

From a mental health nutrition perspective, bariatric surgery should be the last resort; bariatric surgery frequently leads to complications, including

impaired nutritional status due to malabsorption syndrome as well as psychological sequelae. However, there are clients for whom it represents a viable alternative to improving health. Nearly 300,000 bariatric surgeries are performed annually in the United States yet GLP-1 and GIP agonists may be a better alternative to irreversible surgery. With the advent of these new medications, the rate of bariatric surgeries has dropped precipitously.

Despite the options, the client (or physician) may still push for surgery. Thus, it is up to the clinician to use all the tools at their disposal to provide an integrative approach. While several studies have identified some of the psychological predictors of success, they are inconclusive. Substance abuse and psychosis are among the contraindications. Several studies demonstrate significantly high rates of self-reported childhood maltreatment emotionally and sexually among male and female obese individuals seeking bariatric surgery. Noncompliance with postsurgical requirements is high. Numerous studies have identified high rates of psychiatric hospitalization and suicidality among childhood sexual abuse survivors after bariatric surgery (Clark et al., 2007).

Where people with BN or BED seek bariatric surgery, an assessment should include a history of exposure to complex trauma. There are high rates of traumatic stress and developmental trauma disorders leading to higher rates of somatic symptoms. Take care to ensure that bariatric surgery is not suggested as another in the list of surgeries in the attempt to “cut out” the body’s trauma memory. Likewise, eating as a self-regulation and self-medication method should be assessed before bariatric surgery. Food, carbohydrate, and fat addiction, in particular, should also be evaluated.

People may seek bariatric surgery after trying other forms of surgery, such as liposuction or cosmetic surgery. These clients may have body dysmorphia or body image issues. Bariatric surgery will not solve any of the underlying problems that may contribute to BED; indeed, it can make them worse.

A comprehensive assessment can define whether an individual is a candidate from a mental health nutrition perspective. Because bariatric surgery is a business, a therapist must advocate for the client, and the nutritionally oriented therapist can provide alternatives to surgery that may not have been considered. While a client may be a candidate physically needing weight loss, not all clients respond well, especially compulsive eaters, unless they can manage the required day-to-day changes for a

lifetime. Furthermore, food addiction often transforms into alcohol abuse or other addictive behaviors. Where compulsive eating and being overweight are associated with a history of childhood sexual abuse, weight loss can trigger memories and flashbacks, and it is advisable to address childhood trauma before surgery. Many people show improvement in physical health and self-esteem due to weight loss, yet many continue to struggle psychologically (Kubik et al., 2013). Bariatric surgery patients show higher suicide rates than the general population (Peterhänsel et al., 2013).

A comprehensive assessment that results in recommendations for surgery should lead to an individualized, strengths-based treatment plan, improve resilience, and engage social supports while exploring obstacles and strategies for postsurgery adaptation (Mitchell & de Zwaan, 2011).

The Readiness to Change for Bariatric Surgery Assessment Tool (RCB-SAT) objectively assesses the patient's cognition, beliefs, and motivation regarding the bariatric diet and lifestyle changes (Carlson, 2017).

A qualitative interview should include comprehensive weight and diet history, general eating behaviors, history of past or present eating disorders (based on the *DSM-V*), BED (which is the most common reason people come to bariatric surgery), purging or compensatory behaviors, night eating syndrome, emotional eating, exercise, substance abuse, trauma history, treatment history, stressors and coping skills, and social supports. The intake form provides sections for all of these areas. The assessment should include psychoeducation about the surgery and postsurgery nutrition and expectations of surgical outcomes.

Complete a comprehensive nutritional assessment before surgery and include nutrient status. While bariatric-specific recommendations focus on thiamine, Vitamin B-12, folate, iron, calcium, zinc, and Vitamin D, a more comprehensive nutritional analysis outlined in this book will benefit the client along with specialized food allergy/sensitivity testing, especially given the high rates of gluten sensitivity found in bulimic clients. Specialized blood tests measure vitamin mineral status before surgery, and a client can opt to optimize nutritional status. SIBO is common after bariatric surgery, and attending to gut health in advance is essential.

Following a comprehensive evaluation, the clinician can provide a report to the bariatric medical team or make recommendations for mental health treatment required before surgery, for example, if there is a mood disorder. The client may also require further education about the lifestyle

changes needed postsurgery. Suggestions to attend a post-bariatric surgery support group may also be beneficial.

Assessment Essentials for Bariatric Clients

Weight and Lifestyle Inventory (WALI) (Wadden & Foster, 2006)

Boston Interview for Bariatric Surgery (Sogg & Mori, 2009)

Readiness to Change for Bariatric Surgery Assessment Tool

Bariatric Interprofessional Psychosocial Assessment Suitability Scale (BIPASS) (Thiara et al., 2016)

BARI test (Ghizoni et al., 2022)

Cleveland Clinical Behavioral Rating System (Heinberg et al., 2010)

Micronutrient tests (blood) to measure the function of 35 nutritional components, including vitamins, antioxidants, minerals, and amino acids, in white blood cells (SpectraCell Laboratories, Genova, Vibrant America, Life Extension)

Inability to Gain Weight

Some clients want to discuss being underweight and problems with gaining weight. Being underweight can be a risk factor for poor mental health, yet contrary to popular belief, there appears to be no association between poor mental health and poor body satisfaction or other body image issues in the noneating-disordered, underweight population. Underweight may result due to poverty, digestive illness, hyperthyroidism, genetics, or drug or alcohol use. Several issues can underlie the inability to gain weight; they include malabsorption associated with gluten or other food allergies, Crohn’s disease, and colitis. Stimulants and thyroid problems can cause weight loss or prevent weight gain. Older clients may experience sarcopenia, which results in muscle loss and is a risk factor for falls and cognitive decline. It generally results from reduced levels of exercise, protein deficits, and hormone changes.

Nutritional suggestions for weight gain include high-quality proteins and fats, root vegetables and whole grains, raw nuts, and supplemental smoothies with whey or pea protein added. Weight gain should concentrate on muscle (not fat) gain through amino acid supplementation.

As I have discussed earlier, many different symptoms can derive from similar types of imbalances or combinations of complex nutritional deficits.

One of the first steps I take following the assessment is to provide clients with a handout for a delicious Pineapple Coconut Cognitive Smoothie recipe (see Section H.2 in Appendix H). Whether they wish to lose or gain weight, decrease depression or anxiety, or improve their energy and cognitive function at any age, this initial step starts the process of nutritional change.

Occasionally, clients will express that regardless of how much they eat, they are never satisfied and cannot gain weight. This should alert the clinician to the possibility that the client requires a purine-rich diet for their uniquely fast metabolism. Conducting a tissue mineral analysis can identify this pattern, or adding purine-rich foods to each meal for a few weeks will reveal if this provides the correct type of fuel for this client (see Section H.3 in Appendix H for a high-purine recipe for Roasted Cauliflower With Anchovy Sauce).

Practitioners Working in the Field of Nutrition

Numerous practitioners can serve as resources and referrals for collaboration and for prescribing mental health nutritional programs. Review Appendix C for the training and credentials for each profession. This list may be reviewed with and provided to the client.

Testing Essentials for Mental Health Disorders

Below is a list of foundational and advanced testing used for mental health assessment. In the next chapter I review by diagnostic category the use of these tests.

Cortisol test (24-hour salivary): This test can indicate biological depression due to chronic stress, common in PTSD and other chronic stress and anxiety disorders. It occurs when 24-hour cortisol measures show low waking cortisol and high nighttime cortisol—a sign of biological depression (Diagnos-Techs, Life Extension).

Vitamin D (25-OH Vitamin D) test: A serum Vitamin D (25-OH Vitamin D) test should be performed annually; an optimal range is 40–70 ng/mL (100–160 nmol/L) (Grant et al., 2025).

MTHFR SNP/COMT test: This simple blood test assesses the *MTHFR* gene, which is responsible for methylation. Mutations in the gene are common, affect homocysteine and NT synthesis, and are associated with mental health disorders (Kashi Labs, Life Extension).

Hormone tests (urinary, serum) evaluate the production of free and conjugated circulating steroid hormones and their metabolites and collect melatonin, oxytocin, and growth hormone measures.

Gluten/casein: This test measures antibodies like tissue transglutaminase (tTG) IgA, deamidated gliadin IgG/IgA, and total serum IgA to screen for celiac disease and nonceliac gluten sensitivity (Celiac Profile, Genova).

Gluten sensitivity panel: A saliva-based test that measures anti-gliadin antibodies to assess immune responses to gluten proteins. It's designed to detect nonceliac gluten sensitivity (Diagnos-Techs).

HLA-DQ2/DQ8 genetic testing: This test checks for genetic markers (HLA-DQ2 and HLA-DQ8) that are strongly associated with celiac disease. While it doesn't confirm gluten sensitivity, it helps rule out celiac disease as a cause of symptoms.

IgG food sensitivity test, or food sensitivity profile food sensitivity panel (Mosaic, Genova, Life Extension).

The GI-MAP (fecal) test analyzes over 40 different commensal and pathogenic microorganisms, including bacteria, viruses, parasites, and fungi, along with markers of inflammation and digestive function (Diagnostics Solutions Laboratory).

The GI Effects® Comprehensive Profile analyzes biomarkers of digestive, metabolic, immune, and inflammation, as well as bacteria, parasites, and other pathogens (Genova).

Omega-3 index is a blood spot test to assess omega-3 fatty acid levels (Omega Quant, Genova: NutrEval).

Organic acids test (OAT): The OAT panel benefits almost every client with a chronic illness. It is a urine test that measures over 70 different organic acids, which are metabolic by-products of various metabolic processes. The OAT evaluates nutrient deficiencies, gut dysbiosis, mitochondrial function detoxification, oxidative stress,

and neurotransmitter metabolism (Mosaic Diagnostics, The Dutch Test).

Chapter 3: Essential Next Steps in Assessing Health and Diet

After the comprehensive physical and mental health intake, you then might discuss the following with the client:

- An initial review of your findings and analysis based on your intake and review of tests.
- Further testing: discuss timeline, priorities, and costs.
- Genomic Testing: *MTHFR*, *COMT*, PGX.
- Undertake elimination diets.
- Additional resources: video, handouts, reading.
- Allow time for questions and concerns.
- Discuss a referral or consider a future referral; educate your client about the various clinicians who may be of assistance.
- Research practitioners working in the field to whom you might refer and collaborate.
- Prioritizing next steps with the client to include a timeline and follow-up visits.

4

Common Diagnoses and Typical Nutritional Culprits

Diet Essential: *Where there is mental illness, there is always a history of digestive problems.*

Nutritional deficits occur in almost everyone; over 40% of the population has an inadequate intake of Vitamins A, C, D, and E, calcium, and magnesium, and more so among obese individuals (Agarwal et al., 2015). Understanding the role of nutrient deficits as contributing factors to mental illness has evolved over the last 75 years with the research of psychiatrists and biochemists, who explored the role of nutrition and brain function in people with psychotic disorders. It is well established that nutrition intersects with individual biochemistry to play an essential role in mental health.

Nutrient deficits and imbalances contribute to five essential factors in mental illness (discussed in Chapter 3):

Five Essential Nutritional Factors to Assess in Mental Health

1. Chrononutrition imbalance
2. Blood sugar handling and functional hypoglycemia
3. Inflammation, oxidative stress, and mitochondrial function
4. Food allergies and sensitivities

5. Methylation: conversion of folates/folic acid (B-9) to L-methylfolate

Culprits, Deficits, and Diagnostics

In this chapter, I explore key diagnostic categories focusing on the nutrient deficiencies and imbalances that are known to contribute to mental illness. Additionally, I provide recommendations for testing beyond standard psychological evaluations that complement the assessment process described in Chapter 3. These recommendations will help you identify the underlying biological and nutritional factors and target interventions accurately. Before ordering lab tests that measure vitamins, minerals, or cortisol, consider whether the suspected deficit or imbalances can be addressed by supplementing with foods or nutrients or adaptogenic herbs. This approach can save both time and money for your client.

Mood Disorders

Depression

Depression is often an end-stage symptom of chronic stress. Depression is also a disease that arises from systemic inflammation. Chronic stress disables the body's capacity to successfully "quench the fires" to fight inflammation. Inflammation affects the first and the second brain as cells produce cytokines that block tryptophan conversion to serotonin. The stress-depression dyad also underlies ADHD, cognitive decline, dementia, and traumatic brain injury (TBI). Deficits in omega-3 fatty acids also contribute to mood disorders (Parker et al., 2006). Vitamin and mineral deficiencies are common among people who are depressed, in particular, deficiencies in B vitamins (biotin, folic acid, Vitamin B-6, B-1, and B-12), Vitamin C, calcium, copper, iron, magnesium, potassium, and zinc. Alternately, excessive levels of lead and copper (regularly obtained from drinking well water, for example) can also contribute to depression. Low levels of magnesium are frequently present, especially with anxious depression. Too much calcium intake is often found in depression, which is why biochemical individuality demands, for example, that we do not just administer large amounts of calcium to older people with osteoporosis unless we know they require it. Vitamin D deficiency is an important factor in depression. Pregnenolone, the "master hormone" synthesized in the brain, is the precursor for all other hormones, and a deficiency is associated

with depression (George et al., 1994). Celiac disease leads to low iron levels (and anemia) and results in depression. Serotonin requires iron during the conversion of the amino acid tryptophan from foods.

Nutrition and hormones interact throughout the life cycle and play an important role in depression, especially by the age of 40 in both men and women. Women are vulnerable to depression associated with perimenopause or menopause in part because hormonal changes lower neurotransmitter levels. As estrogen levels decrease, serotonin levels can decrease. Progesterone deficiency at this stage is expected because of the stage of life and because stress depletes progesterone. Bioidentical progesterone can improve mood and aid sleep. Testosterone levels also affect the health of both men and women. Low Vitamin D and zinc levels contribute to low testosterone, as do statins and environmental toxins like herbicides. By contrast, supplementation of testosterone is an antidepressant in men who experience low testosterone levels (Pope et al., 2003). See Section N.1 in Appendix N for a protocol for depression.

Assessment Essentials for Depression

The assessment of depression using lab tests can be applied to all types of depression and mood disorders. Below is a list in order of priority, which can be adjusted based on individual risk factors (age, diet history, etc.).

RBC Omega-3 Index: Measures the percentage of EPA + DHA in red blood cell (RBC) membranes, reflecting levels over the past three months. Note: Omega Quant (https://omegaquant.com/) offers clinician discounts and a cost-effective way to measure omega-3 fatty acids, Vitamin D, and MMA.

Vitamin D testing serum levels 25-Hydroxy Vitamin D [25(OH)D]: This is the gold standard test. An optimal range of 50–80 ng/mL (125–200 nmol/L) is associated with better outcomes in depression and mood disorders. Recheck levels within 2–3 months for improvement.

24 hour cortisol/DHEA: Low morning cortisol can indicate endogenous depression.

Folate and B-6: Serum folate test or RBC Folate Testing Red Blood Cell (RBC) folate measures folate within erythrocytes and reflects

longer-term folate stores than a serum test, though it may be more difficult to obtain. Older patients, those who are food-insecure or undernourished, or those with an *MTHFR* mutation, chronic alcohol use, or persistent/treatment-resistant depression may benefit most from this test. Plasma pyridoxal-5'-phosphate (B-6) is the main circulating form of Vitamin B-6 and the standard lab measure. Elevated homocysteine often reflects low folate, commonly due to an *MTHFR SNP*.

Methylmalonic acid: A biomarker that accumulates when cells lack adequate B-12. Elevated MMA is uniquely indicative of B-12 deficiency.

Minerals: RBC magnesium and zinc, serum copper, and copper-zinc ratios. Elevated copper is associated with depression; low serum lithium is also linked to depression.

Iron and ferritin levels: Deficiencies are associated with depression, while elevated ferritin can be an inflammatory marker, also linked to depression.

Thyroid: Comprehensive thyroid testing for depression typically includes TSH, free T4, free T3, reverse T3, and thyroid antibodies, as even subclinical hypothyroidism or thyroid autoimmunity can contribute significantly to depressive symptoms.

Sex hormone testing: Especially important after age 35. Low estrogen or testosterone levels in both women and men can initiate or worsen depression.

Gluten and other food allergies and intolerances: Should be evaluated if suspected contributors to depressive symptoms.

Heavy metals: Lead, mercury, cadmium, and arsenic are associated with depression. Obtain a serum blood test for heavy metals. Quicksilver Scientific provides a blood spot metals panel testing 16 nutrients (calcium, copper, lithium, magnesium, manganese, molybdenum, selenium, zinc) and toxic metals (antimony, arsenic, cadmium, lead, mercury, cobalt, silver, strontium).

Organic Acids Test (OAT): Measures metabolic intermediates in urine, including markers of mitochondrial function, neurotransmitter metabolites, and gut microbial by-products.

Gut health tests: GI-MAP or GI Effects: May identify bacterial overgrowths, parasites, or high beta-glucuronidase levels that can contribute to hormonal and mood dysregulation.

Dutch Test: Advanced Hormone Mapping: A dried urine test measuring diurnal cortisol rhythms, sex hormone metabolites (estrogen, progesterone, testosterone), and adrenal hormones. This is useful when evaluating multiple hormone pathways simultaneously rather than ordering individual tests.

High-sensitivity C-reactive protein (hs-CRP): Chronic, low-grade inflammation is associated with severe or treatment-resistant depression and can guide the use of anti-inflammatory diets and nutrients.

Bipolar Disorder

All of the five essential nutritional mental health factors listed above could underlie bipolar disorder. The pharmaceutical approach to the treatment of bipolar disorder frequently involves the use of mood stabilizers, including carbamazepine, divalproex sodium, lamotrigine, valproic acid, and lithium carbonate. Researchers believe lithium lengthens circadian rhythm (Rohr & McCarthy, 2022), improves mitochondrial energy production (Maurer et al., 2009), and is neuroprotective by reducing inflammation and mitochondrial dysfunction (Ghanaatfar et al., 2023). Yet lithium also has adverse effects. Regulating the circadian clock should be a focus of nutritional and behavioral intervention along with reducing inflammation and oxidative stress. High homocysteine levels in people with bipolar disorder are common, suggesting the impaired ability to convert folates as a result of an *MTHFR SNP*.

Researchers have identified a range of nutritional deficits in people diagnosed with bipolar disorder. Insufficiencies, in particular, include fatty acid deficits and impaired phospholipid metabolism (Stork & Renshaw, 2005). Phospholipids are a special type of fatty acid that supports cellular membranes and signaling between neurons. Pyrrole disorder occurs at higher rates among people with bipolar disorder. Evidence suggests that many people with bipolar disorder have food sensitivities such as gluten and casein. They exhibit reactivity to artificial sweeteners such as aspartame, which increases mood lability and negatively alters the

microbiome. Finally, hypoglycemia aggravates mood lability. See Section N.2 in Appendix N for a protocol for bipolar disorder.

Assessment Essentials for Bipolar Disorder

Functional hypoglycemia: Assess as a contributing factor in mood lability. Insomnia is common in bipolar disorder, and affect dysregulation and mood cycling in response to complex trauma can also appear like bipolar disorder. Harold Kristal and James Haig wrote *The Nutrition Solution: A Guide to Your Metabolic Type* (Kristal & Haig, 2002), which recommends glucose tolerance testing with metabolic typing.

Homocysteine is a chemical in the blood produced when the amino acid methionine breaks down in the body. High levels occur in response to the *MTHFR* mutation and increase the risk of mental health disorders, dementia, and heart disease (standard blood test).

Morningness-Eveningness Questionnaire Self-Assessment Version (MEQ-SA) helps identify circadian rhythm type and best time of day to use light to re-regulate your "clock" (Center for Environmental Therapeutics).

Seasonal Affective Disorder

Seasonal affective disorder (SAD) is a form of major depressive disorder. It is also called "winter depression" associated with the onset of winter and the reduced environmental light. It generally improves when the sun returns in the spring and summer. It occurs more often in women and is associated with disruptions of the visual processing of light, changes in melatonin secretion, and lower levels of serotonin (Rosenthal, 2009). Symptoms of SAD include difficulty waking up in the morning, oversleep, fatigue, low mood, craving for carbohydrates, and weight gain.

The reduction of light exposure and its effects on neurotransmitter function is a central factor in SAD. Vitamin D and carbohydrates in their role in the tryptophan serotonin-melatonin pathway is the focus of most research and treatment. See Section N.3 in Appendix N for a protocol for SAD.

Assessment Essentials for SAD

Seasonal Pattern Assessment Questionnaire (SPAQ): The SPAQ is a brief, self-administered screening tool for SAD (Rosenthal et al., 1984) (see the Resources section at the back of the book).

Premenstrual Syndrome (PMS) and Premenstrual Dysphoric Disorder (PMDD)

A proinflammatory, standard American or SAD diet, which is high in salt and sugar and poor-quality fats, exacerbates hormonal and NT imbalances contributing to PMS (Farpour et al., 2023). A history of trauma is associated with both PMS and PMDD (Pilver et al., 2011). Both PMS and PMDD respond to a combination of dietary and nutritional interventions and circadian rhythm. PMDD is a more severe form of the symptoms related to PMS that leads to impairment of daily life activities. PMDD is a recent addition to the *DSM*, proposed first in 1994 and codified in 2013, and is fraught with controversy. Critiques of this diagnosis suggest that it medicalizes and pathologizes women's hormonal cycles and that in contrast to women living in traditional societies, PMDD occurs in sociocultural contexts where women do not have supportive social and group rituals or time to attend to and process their needs at different times of the cycle.

When working with women with PMS or PMDD, a combination of dietary change, exercise, and yoga (Pal et al., 2022) and the year-round use of black currant seed oil (1,500 mg/d), Vitamin B-6 (pyridoxal 5'-phosphate, 100 mg/d), and magnesium (400 mg/d) stabilize mood and reduce cramping. Some women elect to use intramuscular injections of magnesium and Vitamin B-6 (pyridoxal 5'-phosphate) to lengthen the cycle to 28–30 days to decrease symptoms. Cannabis salve with a CBD:THC ratio of 1:1 applied abdominally with a hot pack brings relief to cramps. Encouraging women to take time for their needs rather than pushing through for work or caregiving is helpful. See Section N.4 in Appendix N for a PMS/PMDD protocol.

Postpartum Depression/Psychosis

Nutritional strategies to prevent postpartum mental distress should begin preconception and continue through postpartum. The SAD diet is associated with perinatal and postpartum depression. Tobacco use during pregnancy is also a risk factor, and women with a history of depression and childhood abuse are at higher risk for depression. Support the HPA axis with adaptogenic herbs and higher levels of proteins, some sea salt, good folate intake, good-quality dietary fats, and a rich supply of zinc, copper,

magnesium, B vitamins, and omega-3 fatty acids, in particular DHA. Enabling adequate sleep postpartum by providing family and social support for mother and infant care is essential and should be facilitated by the therapist during family sessions. Postpartum challenges are often more than just the mother's issue; they are a family and social issue where new moms do not receive the required support. Breastfeeding releases oxytocin and improves bonding and mood. Where breastfeeding poses challenges, a lactation consultant can help.

Postpartum psychosis is rare (1 in 1,000 pregnancies) and usually occurs with risk factors of bipolar or previous psychotic symptoms. However, it can also happen when there is no known history of mood disorders in response to sleep deficit and sudden changes in hormones. Managing risk factors of psychosis before pregnancy should be addressed by optimizing exercise and nutritional status with special attention to omega-3 fatty acids, choline, and B and D vitamins. Social support, sleep, and close monitoring of risk during the postpartum period are essential to prevention. See Section N.5 in Appendix N for a protocol for postpartum depression/psychosis.

For assessment essentials, review tests for depression above. For all postpartum disorders, proactive prevention is essential. For postpartum psychosis, diagnosis is primarily clinical, based on symptoms and medical history. However, a thorough medical evaluation should include screening for sleep patterns thyroid function, anemia, electrolyte imbalances, infections, and other hormonal or metabolic disturbances.

Anxiety Disorders

People with anxiety commonly have disordered breathing, hyperventilation, and somatic symptoms. They complain of headaches, neck pain, jaw pain, leg and body cramps, and tension in the shoulder muscles. Anxiety and asthma often occur in children and adults. Signs of chronic anxiety are often evident during intake. These may include sighing, suspension of breathing (apnea), breath holding, erratic breathing, and intermittent long sighs or gasps.

Hyperventilation or disordered/overbreathing is exacerbated by a vegetarian diet when undertaken by people who are more suited biochemically to acid foods like meats. In anxiety with hyperventilation, CO_2 builds up in the blood, and the diaphragm fatigues. With increased

fatigue and reduced oxygen, hypoxia affects the brain, contributing to headaches and depression. Increased lactic acid in the musculature contributes to anxiety in a bidirectional manner. Shallow breathing changes blood gasses that reinforce alkalosis, which leads to increased lactic acid and a loss of magnesium as the body tries to compensate for the alkalosis. Thus, hyperventilation depletes magnesium in chronic anxiety and panic response.

Low levels of magnesium are a marker for anxiety (Sartori et al., 2012). Anxiety is also associated with low levels of the neurotransmitter gamma-aminobutyric acid (GABA). Caffeine use inhibits GABA in the brain. In individuals with lifelong or family anxiety, there may be a genetic disorder that affects the enzyme glutamic acid transaminase, which converts glutamic acid to GABA. A genomic test can identify mutations in the *GAD1* gene. Low blood levels of essential fatty acids (omega-3) are associated with increased anxiety as are low levels of the Vitamin B complex and Vitamin D. People who experience panic attacks also have similar nutrient deficiencies. Diet pills, amphetamines, asthma medications, caffeine, antihistamines, and steroids all can increase anxiety and panic. See Section N.6 in Appendix N for an anxiety protocol.

Box 4.1
Kumbhaka: A Respiratory Method to Reduce Anxiety

Kumbhaka is a yogic exercise that refers to holding your breath. *Antara kumbhaka* is the retention of breath after inhalation (holding the breath with the lungs full), and *bahya kumbhaka* is the retention of breath after exhalation (holding the breath with the lungs empty). Antara kumbhaka exercises increase carbon dioxide and parasympathetic dominance and reduce anxiety. This increase in CO_2 triggers a mechanism known as the *Bohr effect*, where the body releases more oxygen from hemoglobin to tissues, improving oxygen delivery. Teach this exercise as a complement to nutritional and counseling interventions to reduce anxiety and hyperventilation.

Begin with the *4–7–8 breathing exercise*: Inhale through the nostrils to a count of 4, hold to a count of 7, and let the air out through pursed lips to a count of 8. Repeat the exercise ten times. Slowly, over days, weeks, and months, increase the hold times to a count of 8, 9, 10, up to 20 or 30 seconds. People with cardiovascular conditions should inquire with their physician about contraindications.

Assessment Essentials for Anxiety Disorders

The Nijmegen scale: When a client complains of dizziness, faintness, or vertigo, assess for hyperventilation syndrome as a possible cause. The Nijmegen scale is a 16-item measure useful for identifying anxiety and hyperventilation associated with somatic symptoms (van Dixhoorn & Duivenvoorden, 1985) (see the Resources section at the back of the book).

Alpha-ketoglutaric acid: Kharrazian (2013) suggests a simple challenge test to ascertain glutamic acid/GABA conversion disorder. Take 3,000–4,000 mg alpha-ketoglutaric acid. If there is a genetic basis for this conversion problem, you will feel very nervous and anxious. If you don't have this problem, you might feel a little energized, but it will not cause anxiety or irritability.

Obsessive-Compulsive Disorder

OCD causes people to have obsessive thoughts and ideas and the compulsive need to repeat specific behaviors or mental acts. OCD behaviors can be highly individualistic. People with OCD may also experience depression, eating disorders, ADHD, bipolar disorder, and social phobias. Obsessive-compulsive spectrum disorders also include tic disorders, trichotillomania (TTM), hypochondriasis, body dysmorphic disorder (BDD), and body-focused repetitive behaviors (BFRB). Currently SSRIs are used for pharmacological treatment though usually only 40–60% of OCD patients receive benefit from first-line SSRI treatments. Levels of Vitamin B-12 are often low in people with OCD (Greenblatt, 2013). Melatonin is reduced in people with OCD (Monteleone et al., 1995). High levels of estrogen can also exacerbate symptoms in women with OCD (Rapkin et al., 2002). See Section N.7 in Appendix N for an OCD protocol.

Trichotillomania and Body-Focused Repetitive Behaviors (BFRBs)

Trichotillomania (TTM) is defined as self-induced and recurrent hair loss. It is commonly considered part of the OCD spectrum and is also considered a tic, habit, or addiction. There is often a dissociative element to the behavior itself. More recently it has been included among BFRBs.

TTM co-occurs at high rates in people with a history of trauma (Gershuny et al., 2006) and may be a self-soothing behavior. It is also associated with celiac disease and the effect of malabsorption of nutrients leading to problems with NT synthesis. Significant improvement of

trichotillomania was observed after 9 weeks of treatment with N-acetylcysteine (NAC) (Grant et al., 2009) and with Vitamin D supplementation (Titus-Lay et al., 2020). The OCD protocol in Section N.7 in Appendix N also applies to TTM and other BFRBs.

Trauma-/Stressor-Related Disorders and Borderline Personality Disorder

Posttraumatic Stress Disorder (PTSD), Complex Trauma, Developmental Trauma

People who have been traumatized often experience depression, anxiety, insomnia, and dissociation, along with intractable physical symptoms, including pain, digestive problems, heart problems, respiratory problems, and reproductive problems (Korn, 2013, 2023a). Substance abuse, including eating disorders, self-injury, and TBI, are common among trauma victims. People with PTSD have increased levels of inflammatory markers and increased allergies and are vulnerable to higher rates of autoimmune diseases, depressed immune function, and, therefore, increased risk of infections. PTSD is associated with disruption of cortisol levels and depletion of NTs.

The primary nutritional factors affecting PTSD are similar to those in chronic depression and anxiety. Nutritional deficits also result from the poor dietary habits associated with impaired self-care and the side effects related to the use of pharmaceuticals to treat functional pain symptoms of fibromyalgia, migraines, irritable bowel syndrome, and long-term effects of substance abuse. For example, tobacco and cannabis use is high in PTSD, and opiate and benzodiazepine use is common. Impaired mitochondrial function may set the stage for neuroinflammation in PTSD (Dmytriv et al., 2023), suggesting a role for mitochondrial nutrient support. I discuss self-harming behavior below when discussing BPD. See Section N.8 in Appendix N for a protocol for PTSD and other traumas.

Assessment Essentials for Trauma

Cortisol test (24-hour salivary)/DHEA test (Diagnos techs, Life Extension)

Array 20 Test (Cyrex Labs)

Blood Metal Panel (Quicksilver Scientific)

High-sensitivity C-reactive protein (hs-CRP) (standard blood test)

Lipoprotein-associated phospholipase A2 (Lp-PLA2) (standard blood test)

MitoSwab™: A buccal swab test to analyze mitochondrial function by measuring the activity of the mitochondrial electron transport chain complex.

Borderline Personality Disorder (BPD)

The concept of borderline personality was introduced in 1938 by psychoanalyst Adolph Stern, who described patients who did not improve with therapy and who did not fit into either the psychosis or neurosis categories used at the time. BPD is a neurodevelopmental stress disorder with near total similarity to complex trauma disorder. The continued use of the borderline diagnosis has evolved into a stigmatizing term of reference (Ring & Lawn, 2019). The diagnosis often defines an approach to treatment where the clinician is afraid of the client's neediness, pervasive distrust, and self-harming behaviors.

It is more effective clinically to change the diagnosis and treat the borderline-diagnosed client for complex trauma. In the context of nutritional interventions, these individuals benefit from a secure, reliable therapeutic alliance with excellent boundaries and a safe setting that encourages self-care, self-regulation, and the strengthening of the "attachment" muscle. Significant evidence exists for structural and functional changes in the limbic system, amygdala, and hippocampus in people diagnosed with BPD (Ding & Hu, 2021). There is a higher prevalence of nightmares, and untreated insomnia worsens symptoms. Safety and improving sleep are the first targets of treatment.

Detoxifying from substance abuse, reducing inflammatory foods, and nourishing the gut and brain will help balance hormones and mood, enhance neurotransmitter function, and lubricate neuronal structures. One study suggested that adults with a BPD diagnosis were significantly less breastfed than the control, resulting in negative effects on infant-maternal bonds. While not incorrect regarding attachment and bonding, what if formula feeding reduces the DHA rich fatty acids, affecting brain function? Accumulation of DHA in breastfed infants is nearly double that of formula-fed infants (Cunnane et al., 2000). One study concluded that fish oil

significantly reduces impulsivity and irritability in people with the BPD diagnosis (Karaszewska et al., 2021).

Perhaps the most challenging part of BPD and complex trauma to treat is self-harming behavior (Blay et al., 2023), and suicidality. Extensive body modification (tattoos, piercings, etc.) is a subset of nonsuicidal self-injury (NSSI). Self-harming behavior occurs during severe dissociative episodes and includes alterations in analgesia and sensation. Self-harming behaviors are mediated in part by the endogenous opioids β-endorphin and met-enkephalin opioids, which act upon receptors that mediate stress-induced analgesia. Some research suggests that individuals with NSSI have lower levels of β-endorphin and met-enkephalin in cerebrospinal fluid compared with the non-NSSI group, suggesting treatment with naltrexone opioid antagonists can be beneficial and reduce NSSI. Omega-3 fatty acids reduce self-harming behavior and depression (Gutierrez Higueras et al., 2023).

Refined sugar intensely increases the release of endogenous opioids, and withdrawal appears to mimic opiate withdrawal (Colantuoni et al., 2002), suggesting the challenges of eliminating addiction to sugar in the diet and the need to find an equivalent substitution. Nutrients that reduce sugar craving include chromium (200 mcg/b.i.d.), berberine (500 mg/b.i.d.), Vitamin C (2 g/t.i.d.), and licorice root tea. Exploring what the clients define as delicious foods can also target sensory enhancement by releasing endogenous opioids and dopamine. Fish oil (2,000 mg/d), hemp, and the use of high-CBD/low-THC cannabinoids can be helpful to decrease anxiety (Ferber et al., 2021) and improve sleep (Saleska et al., 2024).

There is some evidence (Kong et al., 2023) that a ketogenic diet helps reverse the damage of alcohol (sugar) and drug addiction, which also occurs at high rates among people with BPD diagnosis. Individuals experiencing suicidality have lower levels of Vitamin D (Bozzatello et al., 2018; Gokalp, 2020), and supplementation reduces risk (Lavigne & Gibbons, 2023). Adrenal and hypothalamus glandulars support the chronic stress response of the HPA axis (Drews et al., 2019). Licorice root tea is a gentle adaptogenic stimulant to use in the morning to balance the HPA axis and ashwagandha (600 mg) will aid sleep in the evening (Korn, 2013, 2023a).

In BPD, there is often impaired interoception (D’Andrea et al., 2022) linked to reduced emotional awareness, similar to alexithymia with challenges with imagery, naming emotions, anticipatory anxiety, misreading cues, impulsivity, and distress intolerance (Schmitz et al., 2021), suggesting

the benefits of the digestive body scan and palpation to support interoception, self-image, and sensation. Conduct this exercise to client tolerance (see Appendix D). See Section N.9 in Appendix N for a BPD protocol.

Chemical Dependency and Substance Abuse

Humans everywhere seek to alter their consciousness. Alcohol, drugs, plants, and foods all alter consciousness. Distinguishing between altering consciousness as a ritual for healing or self-medication and addiction is essential to mental health recovery. Successful treatment of use disorders requires understanding what the client experiences as being altered and why. This will guide nutritional strategies.

In my practice, I have observed success with the nutritional treatment of addictions by combining two models of mental health nutrition: the model of self-medication and the model of nutrient deficit. The concept of addiction as self-medication (Khantzian, 1997) suggests that people choose substances to self-regulate painful affective states. This leads to using substances, whether self-prescribed or clinician-prescribed, that medicate what the brain/body cannot do for itself. This concept also applies to addiction as nutrient deficiency disease, with solid evidence provided by several studies (Williams, 1998; Hoffer, 1962; Pfeiffer, 1988; Enig, 2000; Altarelli et al., 2019; Jeynes & Gibson, 2017; Mahboub et al., 2021; Dervaux & Laqueille, 2017). During the assessment process, we analyze these deficits and supplement with nutrients that address the required affective and biochemical effects. If you understand what the client is self-medicating, then you can identify the nutrients that may be missing; this will complement all the other beneficial addiction therapies.

Drugs and alcohol stimulate neurotransmitter release and create a sense of pleasure and reward in the brain. But over time, these exogenous chemicals suppress the ability of the brain to produce its chemistry. The brain says, “Look how I am getting all this drug action without doing much at all.” For example, almost all addictive substances cause an increased production of dopamine, one of the neurotransmitters involved in feelings of reward and pleasure. However, overstimulation of dopamine leads to depleted dopamine levels and, in turn, a lack of pleasure in life. This drives the cycle of reaching for more dopamine-stimulating substances to get that

pleasurable feeling. It is like hitting your thumb with a hammer; you feel it the first time, but it becomes numb if you keep hitting it.

The use of alcohol and drugs can contribute to primary or secondary malnutrition. Primary malnutrition occurs due to a lack of food intake, whether due to lack of money and access to food, being unhoused, co-occurring disorders, or expenditures of resources on drugs. Secondary malnutrition occurs as a result of the ways the specific substance impairs digestion and absorption of nutrients. Co-occurring disorders such as PTSD, depression, and eating disorders are common, and alcohol and drug abuse occurs as self-medication in response to traumatic stress. While each type of substance leads to specific deficits, supplemental choline essential fatty acids (omega-3), and B vitamins are among the first nutrients required. Gamma-glutamylcysteine (GGC) is a direct precursor to glutathione and rapidly boosts glutathione levels, especially in cells under oxidative stress. Doses for GGC range from 500 to 2,000 mg per day (Zarka & Bridge, 2017).

Alcohol

Alcohol is an example of a substance that, when abused, leads to both primary and secondary malnutrition. Nutrient deficits make one vulnerable to alcohol use, and the ability to digest and absorb nutrients and fatty acids becomes further impaired due to chronic alcohol use. Alcohol use inhibits fat absorption and impairs the absorption of the omega fatty acids and Vitamins A, E, and D, normally absorbed along with dietary fats. Low levels of folate and Vitamin B-12 are typical in depressed patients who have a history of alcoholism. Chronic excessive alcohol consumption depletes brain levels of omega-3 fatty acids. Binge drinking leads to insulin resistance, making individuals with a history of alcohol abuse more likely to develop type 2 diabetes and, later, possibly dementia. A severe thiamine (Vitamin B-1) deficiency can occur in heavy alcohol users, leading to brain damage, called Wernicke-Korsakoff syndrome.

Alcohol addiction is also a biological addiction to sugar. As people withdraw from alcohol, they often replace alcohol with refined sugar and simple carbohydrates and increase coffee intake as part of the withdrawal and maintenance process. This can serve as a short-term transitional approach to ease withdrawal; however, it is not a long-term benefit, as the sugar will exacerbate cravings. See Section N.10 in Appendix N for a protocol for alcohol withdrawal and recovery.

Assessment Essentials for Alcohol Use

NutrEval: a blood and urine profile that evaluates over 125 biomarkers and assesses the body's functional need for 40 antioxidants, vitamins, minerals, essential fatty acids, amino acids, and digestive support (Genova).

Liver function tests, including ultrasound to assess for hepatic steatosis (fatty liver) (standard blood and ultrasound).

Assess for ability to eat and digest nutrients for the recovery process.

Assess for IV nutrient support (Myer's cocktail, Vitamin C, phosphatidylcholine).

Cannabis

Like many substances, cannabis can be medicinal or can be misused. Cannabis is not physiologically addictive. It is used to self-medicate symptoms of PTSD and chronic pain. Medical cannabis and, increasingly, recreational cannabis have been legalized in the United States.

Chronic smoking of cannabis can lead to lung irritation, and people will benefit from vitamins and glandulars that support lung recovery. Cannabis users will benefit from new technologies that do not cause lung irritation. It can also be psychologically addictive. There is some evidence that frequent cannabis use in children and adolescents harms the brain, and there is debate whether these effects last upon cessation of use (Scott, 2023). It is wise to limit cannabis use until full brain development has occurred by age 21 and to assess for cannabis use disorder.

Cannabis withdrawal syndrome is in the *DSM-V*; irritability, nervousness, sleep difficulties, appetite changes, restlessness, and depressed mood are among the symptoms described. It is common for cannabis smokers also to smoke tobacco. In these cases, it is beneficial to withdraw from tobacco first, followed by cannabis. Essential fatty acids positively affect the endocannabinoid system in the brain, reinforcing the idea of supplementation for people who wish to decrease or eliminate recreational cannabis use. Hemp oil is a good fat of choice, along with fish oil, borage oil, and butter. There is some evidence that N-acetylcysteine (NAC) can reduce cannabis use and cravings (Sharma et al., 2022). Dose NAC at 500 mg/b.i.d. See Section N.11 in in Appendix N for a protocol for cannabis withdrawal.

Cocaine

In animal models cocaine increases oxidative stress, and low cholesterol has been found in people who have detoxified but relapsed to cocaine addiction (Buydens-Branchey & Branchey, 2003), suggesting the importance of fats for brain function in maintaining recovery. Cocaine depletes dopamine in the brain and can also damage delicate mucus membranes. It decreases appetite, can lead to primary malnutrition, and depletes Vitamin B-6, thiamine, and Vitamin C. See Section N.12 in Appendix N for a protocol for cocaine withdrawal and recovery.

Ecstasy (Molly)

MDMA (3,4-methylenedioxymethamphetamine) is a common component in the drug ecstasy. MDMA releases a flood of serotonin and dopamine and increases blood levels of the hormones oxytocin and prolactin. MDMA is used both therapeutically, for example, to treat PTSD (J. M. Mitchell et al., 2023), and also as a street drug that is often impure or mixed with other substances.

The street drug ecstasy may also include cocaine or caffeine. Acute adverse effects, such as jaw clenching, dry mouth, and loss of appetite, are common, especially among women (Liechti & Vollenweider, 2001). Street-obtained ecstasy initiates a cascade of oxidative stress depending upon the chemistry of the drugs used and the chronicity of use. Withdrawal needs include addressing depression and mood lability following use and the use of L-tyrosine or D,L-phenylalanine to increase dopamine levels. See Section N.13 in Appendix N for a protocol for MDMA/ecstasy recovery.

Methamphetamine

Methamphetamine (meth) leads to oxidative stress and neuronal damage. It damages proteins in the brain that protect and repair dopamine, resulting in Parkinson-like symptoms. It also appears to damage the blood-brain barrier. Malnutrition is common among meth users since it decreases appetite. One randomized study showed no effect of NAC on methamphetamine use (McKetin et al., 2021). Inpatient care, pharmacological support, and optimizing nutritional status benefit the client during the initial phases of abstinence. Start IV vitamins, high-dose omega-3 fatty acids, and B complex vitamins immediately. See Section N.14 in in Appendix N for a protocol for meth withdrawal and recovery.

Opiates

There are a wide variety of opiates in use, both legal and illegal; OxyContin and Vicodin are commonly prescribed opiates to which people may become addicted, and heroin is a widely used addictive substance. Opiates impair digestive function, and prolonged use impairs the body's capacity to reduce pain. People addicted to opiates (or who are on methadone treatment) are at risk for increased sugar intake (Mysels & Sullivan, 2010), leading to obesity, hypoglycemia, and diabetes. Among the major opiates in use are morphine, codeine, and the semisynthetic derivatives hydrocodone, oxycodone, and hydromorphone. Among the effects of these medications/drugs is the reduction of glutathione and selenium. Combining medical cannabis, cranial electrical stimulation, and the National Acupuncture Detoxification Association (NADA) acupuncture protocol is a therapeutic alternative to consider in opioid use disorder (Le et al., 2024; Wiese & Wilson-Poe, 2018). See the protocol for opiate withdrawal and recovery in Section N.15 of Appendix N.

Tobacco and Nicotine

Smoking tobacco is a form of self-medication, though in some societies, most notably American Indian, it is used in small quantities as a ritual, sacred plant. Tobacco is a euphoriant plant; it increases cognitive function, can appear to reduce anxiety, and possibly helps extinguish traumatic memories. As a result, tobacco use and nicotine dependence are high among people with PTSD (Shevorykin et al., 2024). Because nicotine is an antidepressant, cessation often triggers depression. Nicotine also speeds metabolism, and weight gain usually follows withdrawal. Nicotine dependence is highly heritable, and people who metabolize nicotine more slowly tend toward less dependence (Benowitz, 2008).

Considerable toxicity is associated with nicotine. Commercial additives and other toxins contribute to increased oxidative stress in the body. These affect nutrient status, and smokers are known to have lower levels of B vitamins, Vitamin C, and the antioxidants β-carotene and Vitamin E. Mineral levels of selenium and zinc, known as antioxidant minerals, are measured at lower levels in smokers. This is likely due to chronic inflammation. Exposure to secondhand smoke appears to lower nutrient levels as well.

Withdrawal from nicotine generally begins within 30 minutes of smoking the last cigarette; consequent physical symptoms peak within three days and last for at least four weeks. People are subject to low energy,

depression, and depressed cognitive function during the withdrawal process, so planning with diet, nutrients, and exercise can mitigate those effects.

Preparation for withdrawal begins with improving diet and balancing blood sugar and oral needs by eating a mixture of high-protein carbohydrates and fats in meals every 3 to 4 hours. Choline-rich foods such as eggs, liver, fish, and adaptogenic herbs like ashwagandha (600 mg/d) are beneficial. Some people benefit from chewing on a licorice root, which is orally satisfying and reduces craving. *Lobelia inflata* L. (Campanulaceae), also known as Indian tobacco or pukeweed contains a-lobeline, an alkaloid that is an antagonist at nicotinic receptors in the brain. Lobelia, a tobacco substitute, is both a sedative and a stimulant with psychoactive properties.

In my clinical experience, many people withdraw successfully from tobacco by substituting cannabis during the withdrawal period. The combination of the cannabis constituents and the inhalation process both likely contribute to their efficacy. THC, the psychoactive constituent, is associated with a reduction of somatic symptoms of nicotine withdrawal, suggesting the anecdotal evidence of the use of cannabis during the withdrawal process has merit (Balerio et al., 2004). There is some evidence that the use of CBD, a nonpsychoactive constituent of cannabis, is helpful for the withdrawal from tobacco (Morgan et al., 2013). Tyrosine precursors have been used to ameliorate the effects of nicotine withdrawal. Prousky (2005) suggests the use of niacin to treat nicotine addiction. High-dose NAC (2,400 mg/b.i.d.) shows promise for cessation of nicotine use (Harlivasari et al., 2024). Walking and/or climbing or swimming to the point of aerobic breathing helps manage anxiety, decrease dissociation, and satisfy the urge to inhale. Heavy breathing mimics the sensation of inhaling smoke. Sweating in a sauna, steam bath, or ritual group sweat can be helpful. Place ice packs on the spine between the shoulders to reduce depression and improve lung function. For a protocol for tobacco withdrawal and recovery, see Section N.16 in Appendix N.

Neurodiversity and Autism Spectrum Neurodevelopmental Disorders

Neurodiversity is the concept that neurological differences, such as autism, ADHD, and dyslexia, are natural variations in the human brain and should be respected as part of the diversity of human experiences. Hence,

interventions should focus on empowering and enabling optimal well-being and individualized interventions (Hartman & Patel, 2020).

The reasons for the exponential increase of autism spectrum disorder (ASD) in the United States and other industrialized countries has not been definitively identified, yet significant research points to a spectrum of reasons ranging from improved diagnosis, changes in criteria (Taniya et al., 2022), advanced parental age at conception, environmental toxins, pharmaceutical exposure, maternal inflammation (Khashan & O'Keeffe, 2024), and deficits in nutrition required for the developing brain. SSRI exposure in animals generated autism-type behavior (Sato et al., 2022) and maternal use of SSRIs during first (Croen et al., 2011), second, and third trimester increases risk of ASD (Boukhris et al., 2016). Lemer (2014) refers to the concept of "total load," which, like allostatic load, suggests that the cumulative burdens of physical and emotional stressors, environmental toxins, vaccines, and food allergies tip the body/mind into the autism spectrum. Fetal exposure to acetaminophen was associated with significantly increased risk of childhood ADHD and ASD (Ji et al., 2020) and the mother's exposure to air pollution in late-stage pregnancy increases risk of ASD in the child (Roberts et al., 2014).

Cognitive and mental distress can arise from neurodevelopmental challenges and are often linked to gut microbiome imbalances and gluten or casein allergies. Digestive problems are very common in people with ASD, leading to numerous types of personalized dietary interventions including gluten and casein free (Yu et al., 2022), specific carbohydrates, and the gut and psychology syndrome (GAPS) diet. Both methods remove all polysaccharides and disaccharides and only allow monosaccharide carbohydrates to reduce inflammation and improve gut function. High oxalate levels from foods and fungus have also been identified in ASD (Shaw, 2013). Among the nutrient deficits that have been identified are essential fatty acids, as well as an imbalance of omega-6 to omega-3 (Vancassel et al., 2001; van Elst et al., 2014). Inadequate levels of choline and betaine have been found in children with ASD, suggesting poor methylation (Hamlin et al., 2013). These children also show evidence of increased oxidative stress (James et al., 2004), and dysbiosis (van De Sande et al., 2014).

Essential fatty acid and phospholipid availability and processing, respectively, are central to behavioral well-being in people with ASD.

Phospholipids play an important role in ASD like most psychiatric disorders. Phospholipids are found in foods like fish oils, eggs, and lecithin. Antiphospholipid antibodies have been found in children with ASD, suggesting an autoimmune response (Careaga et al., 2013) may influence their behavior. These antibodies likely also represent inflammatory processes and impair the ability to utilize fats at the neuronal level. Whether this may be part of a larger ongoing autoimmune dysfunction associated with food-mediated allergens is yet unknown, but it does reinforce the idea of reduction of hyperreactivity of immune response at all levels. The phospholipase 2 (PLA2) enzyme destroys essential fatty acids and has been identified as being high in people on the autism spectrum. Therefore, PLA2 stimulants, such as refined foods that raise insulin (Bell et al., 2004), should be avoided. These clients will benefit from a diet with low carbohydrates and rich in EPA from fish oil, evening primrose oil, and phosphatidylcholine.

Children with ASD often have very challenging food eating patterns and are highly selective about foods, with a preference for carbohydrates and sugars, which may also reflect allergic cravings. Food selectivity also exacerbates nutritional deficits and leads to low levels of calcium and protein (Sharp et al., 2013). Gimpl and Fahrenholz (2002) suggest that a low level of oxytocin (the love hormone that supports prosocial behavior) is common in people along the autism spectrum. Some evidence suggests intranasal administration can help with social behaviors (Y. Huang et al., 2021). However numerous studies show mixed or no results with oxytocin administration, especially with repeated use (Yamasue, 2024). Oxytocin is strongly dependent on good cholesterol levels, suggesting the use of foods with saturated fats like whole cream, eggs, and liver may be important in the diet. An autism subtype is associated with dyslipidemia (Luo et al., 2020) and aggressive behaviors and self-injury have improved with cholesterol supplementation (Aneja & Tierney, 2008). Where there are food allergies or distaste for cholesterol-rich foods, there is a cholesterol supplement available in powder form that may be added to juices. The research on nutritional outcomes is diverse and varied. As in all nutrition interventions a personalized approach to diet and supplements is the optimal approach to treatment and lifestyle (Önal et al., 2023). See Section N.17 in Appendix N for a protocol for ASD and neurodevelopmental disorders.

Assessment Essentials for ASD and Neurodevelopmental Disorders

Total cholesterol (standard blood test)

IgE food allergy test, gluten/casein sensitivity test (Life Extension, Mosaic)

MTHFR SNP (Kashi Labs, Life Extension)

Organic acids test (OAT): identifies oxalates and intestinal bacteria test (urine) examines oxalate levels along with intestinal levels of bacteria and yeast (Mosaic Diagnostics and The Dutch Test)

GI Effects® Comprehensive Profile, a test for zonulin, a marker for leaky gut (Genova)

Attention-Deficit/Hyperactivity Disorder (ADHD)

The diagnostic category of ADHD is fraught with controversy, including overdiagnosis, overtreatment (Kazda et al., 2021), and misdiagnosis, often resulting from significant overlap between symptoms of ADHD, oppositional defiant disorder (ODD), and childhood traumatic stress. Some clinicians question its existence and express concern over the significant side effects of stimulants on the developing brain (Baughman, 2006), including increased risk of psychosis (Nanda et al., 2023). Problems maintaining attention are multifocal. Poverty, environmental stress, violence, household stress, and developmental trauma lead to learning and attention problems (Burke et al., 2011) and may be mistaken for ADHD. Many children with a diagnosis of ADHD may be hungry and may not eat breakfast, or if they do, it may be a highly refined carbohydrate-rich breakfast. Their behaviors may reflect functional hypoglycemia and deficits of essential fatty acids. The reduction and elimination of physical exercise programs in schools, the mandatory requirement to sit for long hours, and limitations on teaching to learning styles, ignoring ultradian rhythm fluctuations which alter brain hemispheric dominance every 90–120 minutes (Korn, 2023a; Korn, 2023b), all contribute to behavior problems. Medications such as Adderall and Ritalin, the commonly prescribed medications, lead to problems in sleep, appetite, weight loss, and cause irritability. These medications also create functional changes in the brain, which are then treated with additional drugs. Children with ADHD often have low levels of zinc and iron, both of which are required for neurotransmitter synthesis. Dopamine levels may be low in ADHD, and

essential fatty acid and phospholipid metabolism is likely impaired. Food sensitivities, a highly refined carbohydrate diet, food coloring, microbiome imbalance, and toxic exposures such as heavy metals and environmental toxins are also common (Kidd, 2000). Some children and adults are also sensitive to foods containing salicylates. An oligoantigenic diet shows positive results (Lange et al., 2023) and dietary interventions for natural dopaminergic support may include coffee and chocolate, enhancing attention, memory, and learning (Shateri et al., 2023; Vázquez et al., 2022).

See Section N.18 in Appendix N for an ADHD protocol.

Assessment Essentials for ADHD

Omega-3 index (Omega Quant, Genova: NutrEval)

Vitamin D (25-OH Vitamin D) test

Hair tissue mineral analysis (HTMA): Laboratories offer hair mineral testing (Trace Elements)

Standard blood test: Red blood cell (RBC), analysis of magnesium, potassium, and zinc testing; consider also urine mineral analysis

MTHFR SNP (Kashi Labs, Life Extension)

Cognitive Function, Alzheimer's Disease, and the Dementias

There are diverse types and causes of dementia; the most common is Alzheimer's disease (AD), but dementias can also include vascular, Lewy body, and frontotemporal dementia. The correct and timely diagnosis of dementia type(s) is essential to developing nutritional interventions to slow, stop, or even reverse the process of decline. People with a history of mental distress, in particular depression, diabetes type 2, PTSD, and TBI, are vulnerable to cognitive decline. PTSD is associated with accelerated cognitive decline in middle-aged women (Roberts et al., 2022). Nutritional factors, particularly chronically elevated glucose levels, insulin resistance (Michailidis et al., 2022), and trans fats (Golomb & Bui, 2015), contribute to the numerous risks associated with memory loss and cognitive decline. Upward of 15% of cases of mild cognitive decline evolve into dementia.

Cognitive decline reflects a well-established process of oxidative stress and inflammation. Oxidative stress damages neurons, contributing to Alzheimer's and cognitive impairment. Just as the intestines can become hyperpermeable in response to inflammation, so can the brain develop

neuroinflammation. Lipoprotein-associated phospholipase A2 (Lp-PLA2) is a biomarker of inflammation that contributes to atherogenesis and increases the risk of vascular dementia (Zuliani et al., 2023).

Toups et al. (2022) evaluate numerous biomarkers, including inflammation, chronic infection, dysbiosis, insulin resistance, protein glycation, vascular disease, nocturnal hypoxemia, hormone insufficiency or dysregulation, nutrient deficiency, toxins, and mold exposure (Bredesen, 2016).

Health risk factors include a history of brain injury, PTSD, poor-quality sleep/untreated sleep apnea, diabetes, smoking, and chronic depression. The brain loses volume and ages faster in major depressive disorder (Jha et al., 2023), leading to cognitive decline. There is a growing body of evidence that implicates the herpes simplex type 1 virus in the development of Alzheimer's dementia (Vestin et al., 2024). People with elevated homocysteine levels have a greater risk of cognitive decline since high levels of homocysteine cause memory impairment, reduced brain circulation, and brain volume.

Lead, cadmium, and manganese are associated with impaired cognitive function and cognitive decline (Aloizou et al., 2020; Bakulski et al., 2020; Yan et al., 2016). Aluminum is a known neurotoxin, and occupational exposure to aluminum is implicated in neurological diseases, including Alzheimer's (Exley, 2014; Zhang et al., 2021). There is significant evidence that exposure to environmental toxins affects cognition negatively and increases the risk of dementia. These toxins include a range of pesticides, herbicides, and fungicides (Baldi et al., 2001), as well as cumulative exposure to lead (Bakulski et al., 2012) and work exposure to low-frequency electromagnetic fields, cell phones, and electronics.

Carrying the *APOE4* allele is a significant genomic risk factor, linked to a heightened likelihood of developing Alzheimer's disease and heart disease. APOE plays a critical role in the transport and metabolism of lipids. Possessing one allele raises the risk of AD by 30%, with two alleles increasing risk by upward of 70%. People with *APOE3/4* or *APOE4/4* genotypes do better on low saturated fats and require higher levels of omega-3 fatty acids. Dietary risk factors include foods that increase inflammation and insulin levels, such as simple carbohydrates, sugars, and trans fats.

Low levels of the carotenoids, xanthophylls, lutein, and zeaxanthin are associated with cognitive decline (Johnson, 2012), and Vitamin D deficiency accelerates age-related cognitive decline. Veterans with PTSD and cognitive decline had lower BDNF (Domitrovic Spudic et al., 2022), and PTSD symptom severity is associated with accelerated cognitive decline (Prieto et al., 2023).

The research on the relationship between cholesterol and memory loss is nuanced and mixed. Memory loss is associated with cholesterol levels that are too high and too low. People with cholesterol below 200 consistently show lower cognitive functional capacity (Elias et al., 2005; F. N. Yang et al., 2020). Low LDL-C levels (<70 mg/dL, especially <55 mg/dL) are associated with more significant cognitive decline (Hua et al., 2021), suggesting a reconsideration of aggressive lowering of LDL. Calcium buildup in the brain contributes to age-related cognitive decline (Moore et al., 2023). A decline in calcium-binding proteins is a critical factor in calcium accumulation and appears to affect Alzheimer's and vascular dementia (Nimmrich & Eckert, 2013). Higher levels of CRP, fibrinogen, and elevated plasma viscosity are associated with age-related cognitive decline (Marioni et al., 2009).

Acetylcholine is one of the most important neurotransmitters for cognitive function, required for sleep, memory, learning, and neuromuscular function. Acetylcholine declines with age, contributing to the decline in neurological function. Dietary choline, such as found in eggs and lecithin, is one of the nutritional precursors of acetylcholine. It may be deficient in the diets of vegetarians and vegans, people on low-fat and low-cholesterol diets, or those with elevated alcohol consumption. Low levels of folate and Vitamin B-12 are also risk factors for the development of dementia (Wang et al., 2001). Several studies have failed to find an increased risk of dementia among vegetarians or vegans (de Crom et al., 2023), while a diet of healthy plant foods versus an unhealthy plant-based diet did find an increased risk of dementia in the unhealthy choices group (Wu et al., 2023). See Section N.19 in Appendix N for a protocol for cognitive decline, Alzheimer's disease, and dementia. See also Section H.2 in Appendix H for a recipe for a Fantastic Fungi Smoothie for cognition and memory.

Assessment Essentials for Cognitive Decline

Assess cognitive function whenever the individual or those around them, such as spouse, family, colleagues, or friends, note that there are ongoing problems with short-term memory or executive functioning. Baseline screening for cognitive function can occur after the age of 60.

Neuropsychological testing will establish baseline function is important in people expressing concerns about cognitive decline. A combination of clinical history, biomarkers, and functional brain imaging lead to a correct diagnosis

Alzheimer's Linx test assesses the blood-brain barrier and the presence of toxic metals, antibodies contributing to autoimmune reactions, and cross-reactive foods (Cyrex Labs).

Brain Scan is a blood test that combines plasma phosphorylated tau 217 (p-Tau 217), glial fibrillary acidic protein (GFAP), and neurofilament light chain (NfL) blood tests (Apollo Health).

Volumetric brain MRI segments and measures the volumes of critical brain structures, including the hippocampus and ventricles, and compares these volumes to standard norms (standard radiology labs).

High-sensitivity C-reactive protein (hs-CRP) is a marker of inflammation associated with heart disease and systemic inflammation. Dietary change and the use of the suggested nutrients below should show changes in this marker over time (standard blood test).

Lipoprotein-associated phospholipase A2 *(Lp-PLA2)* (standard blood test)

Cortisol test (24-hour salivary) (Diagnos-Techs and Life Extension)

Hormone test (24-hour urinary) evaluates the production of free and conjugated circulating steroid hormones and their metabolites and collects melatonin, oxytocin, and growth hormone measures. A blood test that assesses for sex hormones (Meridian Valley Lab).

Blood viscosity (standard blood test) has a strong predictive value for cognitive decline, stroke, and heart disease (Meridian Valley Lab).

Serum testosterone (free and total) (standard blood test)

Homocysteine (standard blood test)

Fasting insulin (standard blood test)

Traumatic Brain Injury/Concussion Syndrome

TBI may be acute or chronic. The causes range from violence, abuse, accidents (car/motorcycle), athletic injuries, and exposures during war. Following the initial event, a cascade of secondary damage can occur due to inflammation, oxidative stress from free radicals, chemical imbalances (cytotoxicity and calcium influx into neurons), loss of circulation, and insufficient oxygenation, all leading to tissue and neuron damage. TBI is diagnosed based on the level of injury, from mild to severe, and the location of the injury in the brain. In the clinical setting, chronic mild TBI, especially as a result of sports or vehicle injuries years prior, is underdiagnosed and should be assessed.

Nutritional treatment is an essential adjunct to controlling secondary effects in the acute stage. Head injury patients are at risk of zinc deficiency since zinc loss is ongoing following acute injury and is proportional to injury severity. Up to 12 mg a day of zinc may improve physical status and survival (Cope et al., 2012). Nwafor et al. (2023) conducted an extensive review of medical nutritional interventions for TBI. Lewis recommends high-dose omega-3 fatty acids, dosed to 18 grams a day (Lewis et al., 2013). Pycnogenol (Scheff et al., 2013), melatonin, ketogenic diet, and cannabis (Lins et al., 2023; Ryan et al., 2023), choline, uridine, and B vitamins (Thau-Zuchman et al., 2019) have all been studied for use in TBI. Adjunctive support can include hyperbaric oxygen therapy (Harch, 2022). See Section N.20 in Appendix N for a protocol for TBI and concussion.

Sleep/Wake Disorders

Insomnia

Insomnia affects a high percentage of people and is associated with major depression, TBI, PTSD, anxiety disorder, and alcohol and drug abuse. Insomnia commonly occurs with bipolar disorder during both depressive and manic episodes. People require individualized treatment approaches to insomnia.

The HPA axis controls cortisol production, which follows a 24-hour circadian rhythm and interacts with the sleep-wake cycle. Hyperarousal prevents sleep and is often associated with high levels of evening cortisol. While small doses of morning caffeine improve mood and the ability to

focus, higher doses interfere with the delta waves of deep, restorative sleep (Landolt et al., 1995).

Acute illness, changes in the sleep environment, the timing of sleep, severe depression, or stress, may contribute to transient insomnia that lasts for less than a week. Acute insomnia is the inability to stay asleep consistently for less than a month, including difficulty falling asleep, staying asleep, or restless sleep. Chronic insomnia lasts for longer than a month and can be initiated by a medical or psychiatric disorder. Chronic insomnia is a risk factor for the use of sleep medications, including benzodiazepines, which further decrease REM sleep and restorative sleep and exacerbate cognitive decline.

Insomnia can lead to drug and alcohol use, and substance abuse can also increase the likelihood of insomnia. Chronic and acute pain affects sleep. Early childhood trauma survivors may have never had a satisfactory sleep rhythm; these individuals may require more treatment time. Exploring pretrauma functioning or the developmental stage of insomnia onset can identify reasonable goals and improve outcomes. High allostatic load (AL) is associated with sleep disturbances. African Americans and Hispanic populations have higher levels of AL (Chen et al., 2014), suggesting the role of chronic stress, minority status, and hypervigilance due to discrimination (Gordon et al., 2020; Hart et al., 2021) and its effects on restful sleep. High levels of glucose and insulin resistance, diabetes, restless legs, and sleep apnea are also associated with PTSD and insomnia, and insomnia increases insulin resistance and weight gain. I describe the role played by (hidden) caffeine in insomnia in Janet's story in Box 4.2. See Section N.21 in Appendix N for a protocol for sleep-wake disorders.

Box 4.2

Janet's Story: Caffeine and Insomnia

Janet was a 20-year-old college student who came to the office complaining of insomnia and anxiety. She said that while she was under some stress at school, she had always handled it well and did not think anything had changed in her life. During our intake, Janet reached into her bag and pulled out an energy drink that contained 160 mg caffeine and taurine, an energizing amino acid. Janet told me that she drank three cans a day. I explained to Janet that she was drinking the equivalent of 4–5 cups of coffee a day and that we would want to explore her slowly stopping using these drinks. I added that we would find alternatives that would still help her to focus and keep her energy strong but that would not

affect her sleep or cause anxiety. If Janet had not revealed this can during our session, we might have discovered this habit while going through the Korn Food/Mood Diary.

Assessment Essentials for Sleep-Wake Disorders

Evaluate the type of insomnia (sleep-onset insomnia or sleep-maintenance insomnia) for effective treatment.

- *Pittsburgh Sleep Quality Index (PSQI)* is available in 56 languages. It is a self-rating scale that assesses sleep quality and disturbances (Buysse et al., 1989) (see the Resources section at the back of the book)
- *Cortisol test (24-hour salivary):* Evaluation of circadian rhythm disruption will guide nutritional and sleep hygiene interventions. High cortisol at night interferes with sleep and reflects biological depression (Diagnos-Techs, Life Extension).
- *Evaluate evening functional hypoglycemia* when people say they can fall asleep but awaken 2–4 hours later. They may fulfill the criteria for sleep-maintenance insomnia. When blood sugar drops, the body awakens in an alarm state. These individuals benefit from eating a few ounces of protein and carbohydrates before bed. If they awaken at night, they can eat a little food to stabilize their blood sugar levels.
- *Overnight polysomnography (PSG):* This comprehensive study records brain waves oxygen levels, heart rate, breathing, and eye and leg movements. It's usually conducted in a sleep lab and diagnoses conditions like sleep apnea, restless leg syndrome, insomnia, and narcolepsy.
- *Home sleep apnea test (HSAT):* Designed for diagnosing sleep apnea specifically, these tests can be performed at home. They monitor breathing, heart rate, and oxygen levels. There are benefits to a study at home if only sleep apnea is suspected.

Psychosis and Schizophrenia

Schizophrenia is associated with increased levels of oxidative stress and inflammation (Murray et al., 2021) and with low levels of essential fatty

acids and poor phospholipid metabolism. Approximately 80% of people with schizophrenia do not “flush” in response to the administration of 200 mg niacin, which is suggestive of phospholipid signaling dysfunction (Lake, 2006). Early theories of the cause of schizophrenia focused on phospholipid function but left mainstream thought in favor of the NT theory of illness, especially the dopamine theory. While NTs are crucial to healthy cognitive and affective function, the direct treatment of NTs via pharmaceuticals has generally failed to achieve the hoped-for results. The phospholipid concepts have recently been reexamined, especially in light of the decline in dietary phospholipids and essential fatty acids that support brain function.

There is evidence that people with a diagnosis of schizophrenia and psychotic disorders are susceptible to gluten and other food allergens. As early as World War II, clinicians observed that countries that limited bread and cereal consumption significantly decreased hospitalizations for schizophrenia (Dohan, 1966). Infections appear to contribute to psychotic disorders. The overgrowth of the gastrointestinal tract by multiple *Clostridia* species and yeast/fungal species and its effects on various physical and mental health disorders has been well documented (Shaw, 2011). Shaw (2011) found that intestinal infection with *C. difficile* species produced dysbiosis in people with schizophrenia and autism and led to disruption of dopamine function. Healing gut dysfunction (dysbiosis) in psychotic disorders may require medications like antibiotics or antifungals initially to eradicate dangerous levels of bacteria. Exposure to *Bartonella* bacteria appears to be a risk factor (Delaney et al., 2024). Cannabidiol (CBD) appears to have antipsychotic effects and is the subject of ongoing studies (Chesney et al., 2022; Davies & Bhattacharyya, 2019). Deficiencies in folate, Vitamin C, and niacin appear to worsen the symptoms of schizophrenia (Hoffer, 2008). See Section N.22 in Appendix N for a protocol for psychosis and schizophrenia.

Assessment Essentials for Psychosis and Schizophrenia

Niacin challenge test: The niacin challenge test may be used to distinguish schizophrenia symptoms from other severe symptoms (Lake, 2006). Use (approximately) 200 mg niacin to observe a “flush.” People with phospholipid-impaired schizophrenia do not

flush in response to oral or topical niacin administration. The dose required may vary according to genetics.

Wheat/gluten proteome reactivity test (Cyrex Labs)

Eating Disorders

Anorexia

Anorexia nervosa (AN) is characterized by an intense fear of gaining weight, body dysmorphia, and severe restriction of food intake, often leading to extreme weight loss and death. AN predominantly begins in young women during adolescence and is associated with a history of adverse interpersonal events, including abuse and sexual abuse (van den Berg et al., 2024). Prioritize dual diagnosis and integrative treatment. Greenblatt suggests treatment begins with addressing malnutrition by providing nutrients via vitamins and minerals, including amino acids and low-dose lithium orotate (Greenblatt et al., 2021). Carnitine, glycine, Vitamin B-2, and antioxidants are used to treat abnormal levels of isovalerylglycine in AN (Bell et al., 1992). See Section N.23 in Appendix N for a protocol for anorexia.

Bulimia and Binge Eating Disorder

Bulimia nervosa is characterized by recurrent episodes of binge eating followed by compensatory behaviors, including vomiting (purging), laxatives, fasting, and excessive exercises to prevent weight gain. Vomiting/purging is especially dangerous. In addition to treating trauma, eliminating trigger foods and increasing healthy proteins and fats are essential, as is teaching yoga exercises that mimic the action of vomiting, like the Uḍḍīyana Bandha, the HA breath, and obtaining visceral manipulation therapy to stimulate vagus and phrenic nerve responses (Korn, 2013, 2023a).

Binge eating disorder (BED) refers to recurrent episodes of binge eating without the regular use of the compensatory behaviors seen in bulimia nervosa. BED is a distinct eating disorder.

Both bulimia and BED are highly associated with a history of childhood abuse and PTSD, and the successful treatment of eating disorders requires the treatment of comorbid conditions (Brewerton, 2023). Commonly, people binge on refined carbohydrates, sugar, and wheat. Evaluate the client for celiac or gluten intolerance. There is a bidirectional relationship

between eating disorders and celiac disease. Free amino acids, L phenylalanine, 5-hydroxytryptophan (5-HTP), and B-Vitamin complex with additional Vitamin B-6 (pyridoxal 5'-phosphate) all support the dopaminergic and serotonergic pathways that help regulate appetite and carbohydrate cravings. Supplement essential fatty acids, GLA, and morning bright-light therapy. For a protocol for bulimia and binge eating, see Section N.24 in Appendix N.

Pediatric Acute-Onset Neuropsychiatric Syndrome

Pediatric acute-onset neuropsychiatric syndrome (PANS) and pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS) can mimic psychological problems and lead to delays or incorrect diagnoses in children. PANS is characterized by the sudden onset of obsessive-compulsive symptoms (OCD) or eating restrictions, along with at least two other symptoms, such as anxiety, mood changes, irritability, aggression, and behavioral and cognitive difficulties. Onset is abrupt. With PANDAS, a subset of PANS, acute onset of OCD and disruptive behavioral symptoms are associated with a streptococcal infection occurring between ages 3 and 12. There can be delays in diagnosis because the infectious process can be latent, and clinicians may fail to identify symptoms correctly.

Both PANS and PANDAS are considered autoimmune encephalitis, neuroinflammatory responses that can be triggered by infectious and noninfectious exposures, including influenza, Epstein-Barr virus, Lyme disease, human herpesvirus 6 (HHV-6), herpes simplex virus (HSV) 1+2, parvovirus B-19, coxsackievirus, cytomegalovirus, and *Candida*. Noninfectious triggers can include mold or heavy metal exposure. Identifying the cause(s) will define treatment. When using antibiotics, supplement with *Saccharomyces boulardii*, *Lactobacillus rhamnosus* and *L. casei*, and *Bifidobacterium bifidum*, *B. long*, and *B. breve*.

Assessment Essentials for PANS

Infectious Disease Testing: recent or current group A streptococcal infection (throat culture)

Anti-streptolysin O (ASO) and anti-DNase B titers (blood test)

Immune and inflammatory markers

Mold (urinary and home assessment) (Mosaic Diagnostics, ERMI Test Kit)

Lyme, Mycoplasma pneumoniae, *Epstein-Barr virus*

Box 4.3
Integrating Nutrition With Polyvagal-Informed Practices

The emotional and physical self meet at the vagus nerve, often called the "wandering nerve," as it links our heart, digestion, breath, and emotions. Much of our work is with people who are traumatized, and the innovations of polyvagal-informed therapies provide a framework to bridge autonomic function, nourishment—both dietary and social—and digestion. The nutritional practices outlined in this book integrate seamlessly with polyvagal-informed approaches; they enhance social connection, relaxation, and a sense of safety. Nutrition influences vagal tone and autonomic regulation by supporting a healthy gut, reducing inflammation, and balancing neurotransmitters. Clients who appreciate polyvagal practices experience added benefits when integrating nutritional changes. Essential factors I have discussed include the following:

- Eating with others to foster connection.
- Using mindful eating exercises to activate the rest-and-digest state.
- Practicing rhythmic breathing.
- Engaging in self-palpation while performing a digestive body scan.
- Consuming a diet rich in fermented foods and prebiotic fibers promotes gut health and supports the gut-brain connection.

One measurable indicator of autonomic function is heart rate variability (HRV), the beat-to-beat variation of the heart that is negatively affected by stress, trauma, and aging. HRV is a standard measure conducted in cardiology using a 24-hour Holter monitor. Foods and nutritional supplements that positively influence HRV include essential fatty acids like omega-3s (Xin et al., 2013), magnesium, Vitamin D, Vitamin B-12, dark chocolate, and red and blue berries, all anti-inflammatory, relaxing, and supportive of vagal tone. I incorporate specific exercises for my clients, such as gentle palate massage, to complement these nutritional interventions. Just as infants self-soothe by thumb-sucking, stimulating vagal tone and digestion, children and adults can massage the upper palate with their thumb for two minutes daily, especially before meals. Another exercise involves massaging the earlobes, where the vagus nerve comes to the surface, to enhance vitality; this pairs well with adaptogenic herbs and adrenal-supportive foods. Interestingly, in traditional Chinese medicine (TCM), the earlobe reflects the heart center, and a crease in this area is considered a sign of blood stagnation or Qi deficiency. In allopathic medicine, the same observation is referred to as Frank's sign and is associated with an increased risk of coronary artery disease.

To learn more about vagal-enhancing exercises that complement nutritional changes, watch a segment from my video series Self-Care Circuit Breaker where I demonstrate two additional practices to boost vagal tone (https://www.youtube.com/watch?v=CX0Sr9nXnhc&t=236s).

Medical Problems That Intersect With Nutrition

Obesity, Bariatric Surgery, and GLP-1 agonists

People lose weight by undertaking various programs; what matters is persistence and what people feel is a good "fit" for them, reflecting nutritional and biochemical individuality discussed in Chapter 1. Some people will do better on an Atkins-type carnivore diet, others on a Weight Watchers approach, others through intermittent fasting, and others on a vegetarian-style diet. There are high rates of disordered eating among trauma survivors. The needs of the obese client with a history of trauma are more specialized because trauma disrupts metabolic function, alters NT function, and increases inflammation, depression, and anxiety. SSRIs and atypical antipsychotics also cause weight gain. Obesity occurs in response to diminished sleep and an altered microbiome. People may binge on grain-based and sugary carbohydrates (and poor-quality fats), which results in insulin resistance. Address these issues first before considering bariatric surgery, which has poorer outcomes in trauma survivors. Exploring the bariatric postsurgical requirements to adhere to a restrictive diet program and intensive nutritional supplementation is also essential.

People may have difficulty engaging in exercise. CBT and coaching activities can encourage people to exercise, which helps decrease dissociation. Exercise and movement may also trigger flashbacks as people experience their body sensations. Titrating these experiences may include touch therapies (Korn, 2013, 2023a) and other body-oriented activities like yoga or spa services as different methods for decreasing dissociation.

Intensive nutrient supplementation before surgery and optimal DHA HPA and amino acid/fatty acid levels are essential. Before surgery, review protein powder mixes designed for the bariatric client since many include corn syrup, sugars, corn oils, and preservatives. See my recipe for Post-Bariatric-Surgery Nutrient-Dense Smoothie in section H.2 in Appendix H.

Diet After Bariatric Surgery

Following bariatric surgery, intensive nutritional care is required. Unique formulas containing easily absorbed vitamins and minerals along with healthy protein and fats can be used along with nutrients that boost immunity and support the healing of tissues. The nutritional imbalances that existed before surgery continue after surgery and worsen. Food and eating habits will need to be addressed after surgery, including the use of food as a

coping mechanism or to stave off boredom and emotional and social issues related to food, as well as eating disorders.

Complications and digestive problems are common after bariatric surgery; the most common is “dumping syndrome,” in which the stomach empties into the small intestine at an increased rate. The consumption of sugar and high-glycemic carbohydrates exacerbates dumping syndrome. Eating low-glycemic foods and complex carbohydrates is important in addition to proteins and healthy fats. Alcohol and other drug abuse commonly increase following surgery, with 60% of people reporting no previous drinking problems (Ross, 2012). Immune-related arthritis can also develop following bariatric surgery (Bland, 2004).

Major nutritional complications of bariatric surgery continue over more than 20 years after surgery. Decreased intestinal absorption of iron (Bal et al., 2011), folate, thiamine, and calcium; Vitamins A, B-12, D, E, and K; and protein, zinc, magnesium, copper, and selenium are common. Deficiencies related to red blood cell production and bone metabolism are widespread. Despite the suggested use of routine vitamin and mineral supplements after surgery, micronutrient deficiencies are significant in postoperative gastric bypass patients due to the impaired ability of the intestines to absorb nutrients.

Glucagon-like Peptide 1 (GLP-1) Agonists

GLP-1 is a hormone produced in the body. GLP-1 agonists were developed for treating type 2 diabetes and are used for weight loss and appetite suppression. They enhance insulin secretion, inhibit glucagon release, and delay gastric emptying. Side effects include GI symptoms and nausea. Long-term use appears to be anxiolytic and antidepressant; however, it is unclear if that is due to the drug or the weight loss (Guerrero-Hreins et al., 2021). However, there have also been reports of depressed mood and suicidality (Silverii et al., 2024).

Candidiasis

Candidiasis is also known as *Candida*-related complex; it is a common fungal (yeast) infection (*Candida albicans*). Yeast overgrowth is associated with cognitive and affective dysfunction, chronic fatigue, depression, fibromyalgia, and pain.

Candida-related complexes can develop due to antibiotic use, leading to yeast overgrowth in the colon and other body parts. *Candida albicans* is

naturally present in the body. Still, it can also increase in people who are immunocompromised, such as people with HIV-AIDS, or also in response to a sugar-rich diet. Other risk factors include hypothyroidism, oral contraceptives, pregnancy, postsurgery, stress, zinc and iron deficiency, and copper excess. Bread and other yeast-based products aggravate candidiasis. Yeast ferments sugar into alcohol, and endogenous alcohol production elevates after eating carbohydrates-rich foods. Yeast converts the alcohol (ethanol) into acetaldehyde, thus changing the levels of gut flora and leading to chronic candidiasis. The acetaldehyde toxins can also cause a leaky gut (permeability).

The yeast may spread to other parts of the body, passing into the bloodstream through a permeable intestinal barrier. It may also spread from the anus to the genital area, causing vaginal and penile yeast infections. Symptoms include fatigue, vaginal discharge and infections, anal itching, mental fatigue, prostatitis, bloating, indigestion, halitosis, mucus in the stools, low immunity or frequent colds, athlete's foot, cravings for sugar and carbohydrates and yeast, and allergies to foods. Best approaches to reducing yeast while eliminating fungus feeding foods are to eliminate sugar and refined carbs, adhere to a ketogenic diet for 6–8 weeks and incorporate natural antifungal protocols using caprylic acid, garlic, berberine and grapefruit seed extract.

Viral Infections

Effects of viral infection include long COVID, myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), and fibromyalgia. Chronic fatigue syndrome is a complex condition characterized by profound fatigue that persists for over six months. Cognitive difficulties, pain, depression, headaches, sore throat, heart and lung dysfunction, and disrupted sleep predominate. It is more common in women and often co-occurs with fibromyalgia. It is associated with a history of viral infections like Epstein Barr, complex trauma (Sanal-Hayes et al., 2023), chronic stress, and exposure to chemicals and environmental toxins. It may represent a multiorgan systemic breakdown, including the HPA axis, mitochondrial energy production, and Phase 2 detoxification in the liver. Disruption of the microbiome and a high ratio of unhealthy bacteria to beneficial bacteria occurs along with low levels of CoQ10 (Lakhan & Kirchgessner, 2010).

Approximately 30% of people infected with the coronavirus SARS-CoV-2 develop symptoms of long COVID. Persistent SARS-CoV-2 is also called postacute sequelae of SARS-CoV-2 infection (PASC). It refers to ongoing, relapsing, or new symptoms or other health effects occurring after the acute phase of SARS-CoV-2 infection. COVID-19 infection appears to reactivate other viruses, including Epstein-Barr (Bernal & Whitehurst, 2023) and herpes virus. Long COVID has over 200 symptoms, most notably chronic fatigue and postexertional malaise, cognitive impairment, and dysautonomia. The most common mental health symptoms include anxiety, sleep disturbances, depression, PTSD, anxiety, and attention and memory deficits (Marchi et al., 2023). While there is no standard protocol, arginine, CoQ10, NAC, Vitamin C, and medicinal fungi are among the nutrient supports used for their anti-inflammatory antioxidant, immunomodulatory, and capacity to suppress viral activity. Vitamin C and NAD+ are indicated; however, oral ingestion may limit the dose required, suggesting high-dose Vitamin C (25–75 g per infusion) and nicotinamide adenine dinucleotide (NAD+) IV therapy is therapeutic (Block & Kuo, 2022; Vollbracht & Kraft, 2021).

Diabetes Mellitus Type 2

Diabetes type 2 is a chronic, life-threatening condition related to chronic stress, food insecurity, and the SAD diet and sedentism. Chronic stress (Lisco et al., 2024) and PTSD are risk factors for diabetes due to their effects on glucose metabolism. Living with chronic illness is a risk factor for depression that requires intensive daily self-care. Deficiencies of biotin, Vitamin E, protein, zinc, Vitamin B-12, and Vitamin B-6 are common in diabetes and often develop after years of reactive hypoglycemia. These deficits interfere with the enzyme delta-6 desaturase required for essential fatty acid metabolism. Metformin use can reduce levels of Vitamin B-12, leading to impaired cognition. Psyllium husk, niacinamide, Chromium Picolinate, vanadium, and berberine improve satiety, reduce carbohydrate cravings, and slow glucose uptake. A low starchy-carbohydrate diet, including the keto and Mediterranean diets, is indicated for Type 2 diabetes. Adjustments for either diet should apply based on the individual’s metabolism and ability to adhere to the dietary protocols (Gardner et al., 2022).

Early Puberty

Early puberty, also called precocious puberty, is defined as the physical symptoms of puberty occurring in girls under the age of 8. It is associated with psychological and medical health problems such as depression, anxiety (H. Huang et al., 2021), suicidality, physical distress related to mind-body interactions, headaches, stomachaches, insomnia, bulimia, poor academic achievement, substance abuse, and sexual activity. Early puberty increases the frequency of date rape and poor social adjustment with peers (Mendle et al., 2007). African American and Hispanic girls experience early puberty at higher rates than white girls due to higher rates of risk exposures. Among the suspected risks associated with early puberty are stress and adverse events that activate the hypothalamic–pituitary–gonadal axis (Zhang et al., 2019) and obesity, which is associated with hormonal changes and inflammation. Other hypothesized causes include exposure to environmental toxins, especially endocrine gland disruptors that mimic estrogen (Wenger & Marci, 2023), antibiotic use, and exposure to hormones in nonorganic animal proteins.

Nutrition can contribute to slowing down puberty in young girls (and boys). Starting in pregnancy and during development, the basic principles of health nutrition apply: eating organic foods, washing all foods to reduce pesticides, avoiding plastic bottles, and refraining from reheating plastics.

Hypochlorhydria and Gastroesophageal Reflux Disease (GERD)

GERD is a common occurrence and is generally associated with excess stomach acid production. However, in contrast, integrative medicine practitioners believe that it is, in fact, a result of insufficient stomach acid production called hypochlorhydria, which reduces the tone of the lower esophageal sphincter, allowing the stomach’s contents to reflux. Major factors in GERD are excessive (refined) carbohydrate use, smoking, and alcohol. Among the causes of reduced acid output are age, heartburn medications or those used for gastric reflux and stomach ulcers, antacids and proton pump inhibitors, chronic *Helicobacter pylori* infections, pernicious anemia, small intestinal bacterial overgrowth (SIBO), stress, and anxiety.

Hypertension (High Blood Pressure)

Hypertension is commonly associated with stress and PTSD. However, nutrient deficits also play a significant role. Deficiencies in CoQ10, Vitamins B and C, the amino acids arginine and lysine, and the minerals zinc, magnesium, calcium, and potassium can all contribute to high blood pressure. Supplemental taurine (1,000 mg/d) and the herbal compound called CardioTone, which contains *Rauwolfia* spp., helps reduce blood pressure.

Pain and Fibromyalgia

Chronic pain commonly co-occurs with PTSD, depression, anxiety, and substance abuse and contributes to insomnia. Fibromyalgia is a sleep/pain syndrome that co-occurs at high rates with a history of interpersonal trauma, suggesting that the chronic disruption of the HPA axis and overall oxidative stress and mitochondrial dysfunction is impaired. Low levels of EFAs make one more vulnerable to pain. Where pain is acute, treatment is relatively straightforward and swift. However, chronic pain initiates a cycle of helplessness and depression rooted in systemic inflammation. Fibromyalgia co-occurs at high rates with a history of adverse childhood events and circadian rhythm disruption.

Nutritional approaches are essential to reducing inflammation systemically and locally, thus increasing physical mobility and decreasing depression and pain.

Skin Disorders

Numerous skin disorders are associated with poor mental health. Many skin disorders result from food allergies and sensitivities. For example, people with disfiguring skin problems like acne, eczema/dermatitis, and psoriasis are at risk for anxiety, depression, and suicidality (Gupta & Gupta, 1998), with those with psoriasis having the highest risk, next to acne. In psoriasis, people with antibodies to gliadins showed significant improvement in psoriatic symptoms when they eliminated gluten. Adolescents with acne are at risk for depression and anxiety with inflammatory processes underlying both symptoms. Similarly, dietary deficits contribute to acne, particularly zinc, folic acid, selenium, chromium, and omega-3 fatty acids, and an altered microbiome (Katzman & Logan, 2007). In eczema, the intensity of itching correlates to depression, and eczema is associated with casein allergy and sometimes gluten sensitivity. It has been observed for over 100

years that sugar and carbohydrate metabolism may contribute to eczema. Severe eczema correlates with children's intake of fast foods.

Thyroid Disorders

The Thyroid and Mental Health

Clients who are depressed, sluggish, tired, have a difficult time awakening and getting active in the morning, and always feel cold, especially the hands and feet, should be assessed for thyroid function. Poor thyroid function is an important cause or contributing factor in depression. Fatigue, depression, and chronic pain can be mistaken for mood disorders, so rule out or treat hypothyroidism. Blood tests of TSH alone are not always adequate for a diagnosis. Subclinical symptoms may not show up on blood tests. Goitrogenic foods can decrease thyroid activity when eaten in significant quantities by blocking the conversion of Thyroxine T_4 to Triiodothyronine T_3. These include soy and cruciferous vegetables like kale, white turnips, brussels sprouts, broccoli, horseradish, and cabbage, which exacerbate hypothyroidism. Cooking cruciferous vegetables inactivates their goitrogenic effect. Fluoridation and chlorinated water also decrease thyroid function.

Some drugs like Cordarone, Colsalide, Prozac, interferon-alfa, lithium, methimazole, potassium iodide, propylthiouracil, and corticosteroids can cause hypothyroidism as an adverse reaction.

Assessment Essentials for Hypothyroidism

Blood tests are the conventional methods for diagnosing hypothyroidism. However, many clinicians believe there is a subclinical hypothyroidism that may not show up on blood tests but can be assessed based on low basal body temperature and clinical symptoms (see Appendix J).

A blood test can diagnose Hashimoto's thyroiditis, an autoimmune disorder that can be associated with food allergies.

Hyperthyroidism: The Overactive Thyroid

Hyperthyroidism occurs when the thyroid is overactive and produces too much of the thyroid hormone thyroxine. This condition speeds up metabolism and can cause nervousness, weight loss, increased heart rate, irritability, and sweating. There are many causes of hyperthyroidism, among

which may be the overconsumption of iodine-rich foods like seaweed or iodine supplements. Hyperthyroidism is less common, but it should also be assessed as a medical issue in clients with symptoms of nervousness, palpitations, tremors, and excessive perspiration.

Chapter 4: Essential Next Steps for Typical Nutritional Culprits in Common Diagnoses

- Consider the role of nutritional deficits and how they may contribute to client symptoms.
- Link a client's signs and symptoms obtained during the assessment to what is known about nutritional deficits in those disorders.
- Counsel the client about how nutritional deficits can influence mental well-being.
- Explore the interrelationships between the SAD diet inflammation and the client's symptom picture.
- Consider diagnostic categories like PMDD and BPD and in what way they advance or detract from effective interventions.
- Consider what additional tests will address a client's needs and make appropriate referrals.
- Identify the relationships between mental and physical health symptoms and their nutritional factors.

5

Food Allergies, Sensitivities, and Special Diets

Diet Essential: *Mental illness is affected significantly by diet and exposure to food toxins and allergies.*

The origins of people's food choices are rooted in family history and early experiences, shaped by food security or insecurity and by religious and cultural beliefs and practices. These foundational influences establish a sense of taste, preference, and satisfaction. Over time this conditioning is maintained and shaped further by economic factors, social influences, education, and the media, which reinforce or challenge established preferences. When ill health arises from these long-standing food choices, it often prompts individuals (and families) to question their diets and provides an incentive to make changes.

People may also make choices or feel driven to eat certain foods due to allergies and sensitivities. People are frequently unaware of the connection between their symptoms and allergies or sensitivities, even as their body reacts to various foods they consume. The effects may not be immediate but delayed for hours or days. Indeed, someone allergic to shellfish may break out in hives in moments, whereas the signs of gluten sensitivity build over weeks and months.

What people choose to eat can be a response to cravings and the effects of food chemicals on the brain/mind. Undetected mental and physical reactions to foods and food additives can persist for many years. Some

people experience minor or major reactions, not always digestive, while others do not experience any reaction. Eliminating certain foods and additives greatly reduces sensitivities. Symptoms can improve, and adverse reactions frequently resolve.

The saying, *If your food can go bad, it is good for you. If your food can't go bad, leave it alone*, refers to the detrimental effects of preservatives in foods that prevent spoilage.

In this chapter, I first discuss what is known about how food allergies and sensitivities affect mental health and then review some dietary concepts that are beneficial (or detrimental) for mental health. Diets provide a road map for clients to follow.

Nutritional Types

Some people like a map laid out for them, while others prefer to use their inner "homing device," their gut. As a mental health clinician, you need not be a nutritional expert on all diets to help and advise your client. Knowing the types of diets clients are using or what diets are available as a road map for their health will enable you to have a dialogue about their choices, free of bias, and thus enhance your partnership model of care. Review Table 5.1 to match the optimal food ratios for each nutritional type.

TABLE 5.1
Nutritional Types and Best Foods

Type	Metabolism	Blood pH	Best Foods
Fast metabolizer	Burns carbohydrates fast	Acidic	Carnivore and purines, fats, low carbohydrates
Slow metabolizer	Burns carbohydrates more slowly	Alkaline	Vegetarian, carbohydrate rich (lacto-ovo and lean animal products)
Mixed metabolizer	Burns balanced	Balanced	Mixed animal and plant proteins/carbs

Identifying Your Nutritional Type

The first step to identifying an appropriate diet is to explore the client's nutritional type (carnivore, mixed, lacto-ovo-vegetarian, pescatarian) and the ideal range of food types and ratios that will benefit them. The next step

is to discover whether the client has food sensitivities or allergies and, if so, their effect on the client's mental health. Sometimes, eliminating certain foods may be the more manageable first step for specific clients. Identifying allergies and sensitivities can be painstaking. Some may do well eating more protein but may also experience milk sensitivities. As an essential first step, I encourage clients to replace with fresh, whole foods all packaged foods with additives and preservatives, regardless of whether they are aware they are sensitive to them.

Another common challenge to dietary changes may involve working with a vegan or vegetarian who eats a lot of grains and sugar. Such clients may be sensitive or allergic to grains containing glutens, biological carnivores, or mixed oxidizers resistant to animal protein incorporation. This individual may then be willing to try a gluten-free diet to improve well-being before she is willing to incorporate more animal proteins. Using diets to explain desired outcomes can be helpful, but understanding personality needs and the stage of change I discuss in Chapter 9 is crucial to success.

Food Allergies and Sensitivities

Food allergies and sensitivities are common in people who experience poor mental health. Inflammatory reactions caused by diet fall into three categories: food allergy, food-induced autoimmune disease, and food sensitivity. Some of the more common food allergies that affect mental health are glutinous grains and dairy products, but allergies are not limited to these major food categories.

Food Allergies: Definitions

Food allergies involve the reactivity of the immune system. Allergies are often genetic and hereditary. Allergies can be present in childhood through adulthood and are more likely if a parent has an allergy or develops in response to foods that are eaten often. Allergies can also emerge in adulthood and may be linked to chronic stress disrupting immune function or in response to chronic infections, eating poor quality or pro-inflammatory foods, toxic exposure, nutritional deficits, and chronic stress.

Food allergies are severe, sometimes life-threatening reactions of the body and immune system to certain foods. An allergic reaction occurs when

the immune system overreacts, attacking an ordinarily harmless food protein. This is why food allergies are sometimes referred to as “body paranoia.” The body may overreact to a threat that generally should not be threatening. Food allergies occur when the body produces large amounts of the antibody immunoglobulin E (IgE) to neutralize the offending food protein. IgE then stimulates the immune system to release histamine and other chemicals, resulting in an allergic reaction.

Food allergy symptoms can occur immediately after ingesting or several hours later. They may be mild or severe. Mild symptoms of food allergy include itching in the nose, mouth, eyes, and throat, hives, or gastrointestinal problems like vomiting and diarrhea. More severe reactions include angioedema or anaphylaxis.

Common Allergens

While common allergens include milk, eggs, wheat, soy, tree nuts, peanuts, fish, strawberries, and shellfish, nearly any food can cause an allergic reaction.

Pollen-food allergy syndrome occurs when certain vegetables, fruits, nuts, or other foods cause an allergic reaction in people who have hay fever due to similar proteins in the pollen and the foods. For example, a ragweed allergy can cause a food allergy to bananas, tomatoes, or melons. Cooking food usually prevents this cross-reactivity from occurring.

Allergy Testing and Treatment

Food allergies can be tested using a skin prick test, blood test, oral food challenge, pulse test, or elimination diet. The best approach to treatment is the elimination of the allergen.

Food Sensitivities/Intolerance

Food sensitivities are the most common type of diet-induced inflammatory reaction. These sensitivities contribute to poor mental health and yet may be disguised in their presentation. Thus, it may take many years to realize that food sensitivities can cause or contribute to any diagnosis or symptom.

Food Sensitivity/Intolerance: Definitions

Food and food-chemical *sensitivities* or *intolerances*, also called “nonallergic (non-IgE) food hypersensitivities” or “nonceliac inflammatory

reactions," differ from food allergies. They play a role in the inflammation and symptoms of many chronic conditions. Identifying trigger foods can be very difficult because the symptoms may not manifest directly after consuming the offending food, and the amount of food eaten can significantly affect the presentation of symptoms.

Box 5.1
The Coca Pulse Test

One simple way to begin to test for sensitivity is the pulse test, developed by Dr. Arthur Coca, a do-it-yourself method for determining food reactivity. Consider it a first step test in self-awareness to test foods you may have concerns about. It is not recommended in cases of severe allergic reactions like anaphylaxis.

Pulse Test Directions

1. Begin the day by taking your pulse before you get out of bed. Count and record your pulse beats for 1 minute.
2. For each meal, record the foods eaten, along with your pulse:
   a. 1 minute before each meal,
   b. 30 minutes after each meal,
   c. again in another 30 minutes, and
   d. a third time 30 minutes later.
3. Record your pulse just before going to bed.
4. Continue recording your pulse taking your meals eaten for 2–3 days.
5. Take note of meals that caused pulse increases of more than 6 to 8 beats per minute, and identify foods within those meals that could be the cause.
6. Foods that are suspected of causing pulse increases can then be tested individually:
   a. Take your pulse before eating the suspected food item and again 30 minutes afterward.
   b. If a particular food consistently causes your pulse to increase by more than 6 to 8 beats per minute, it's best to eliminate it from your diet.

Symptoms of food intolerances vary widely and can manifest quickly after eating the food or may take several days to appear. Sometimes, the skin shows signs of food intolerance, like eczema, acne dermatitis, rashes, or hives. The digestive system can be affected by problematic symptoms such as gas, bloating, cramping, diarrhea, constipation, irritable bowel syndrome, nausea, and ulcers in the mouth. The respiratory tract can also be affected.

Mental health and physical conditions may be related to food and food-chemical sensitivities, such as fibromyalgia, GERD, irritable bowel syndrome, obesity, migraines, ADHD, ASD, depression, insomnia, and chronic fatigue syndrome. Food intolerances and sensitivities can also have a psychological component when foods are associated with traumatizing events in state-dependent learning memory and behavior. This occurs when an offending food is associated with an adverse event in one's life, and the body associates the pain of the event and the symptoms with the food or even the time of year the event occurred. This can make teasing out cause and effect very challenging. Then, the symptoms can become conditioned and no longer require the food or environmental trigger; they just continue. Juana's experience, described in Box 5.2, reflects how allergic reactions and sensitivities can combine with state-dependent memory, learning, and behavior.

Box 5.2
Juana's Story: Allergic Reactions and Sensitivities

Juana came for treatment for depression and anxiety due to disability associated with unremitting hives and life-threatening angioedema. She experienced ongoing swelling around her neck and shoulders and her clavicle. Her breathing was also affected, and she was on several medications, including antihistamines and sedatives. She was emotionally and physically hyperreactive. Together, we worked on her diet for several months. She closely followed her overall health program and made some improvements. Still, she suffered terribly from the angioedema. During her assessment, I explored her history of the events leading up to the start of her symptoms. On her way home from shopping, she picked up some take-out food and sustained a car accident. During the accident, the seat belt caused bruising across her neck and upper body, and the airbag had activated while her arms were crossed, forcing her hands against her neck and injuring her. She developed PTSD from the accident, and her body/mind memory associated the grocery bags in the car at the time of the accident—which went flying throughout the vehicle—with fear and the bruising and swelling across her upper body. Years later, as she sat in my office, what remained was the state-dependent memory of fear and swelling associated with food. We then integrated a series of hypnotherapeutic sessions to decondition this state-dependent memory as an adjunct to the dietary improvements she was making. Together with her dietary changes, she experienced improvement over time.

Common Foods That Cause Allergies and Sensitivities

Lactose

Lactose is a sugar that is present in dairy products. Lactose intolerance is an impaired ability of the body to digest lactose due to lactase deficiency—an

enzyme needed to break down lactose. Lactose intolerance differs from a milk allergy, in which the immune system reacts to protein(s) in milk. Milk allergies are more common in infancy, whereas lactose intolerance is more common in adulthood.

Lactose intolerance is commonly undiagnosed. Humans lose the ability to synthesize lactase by about age 5; by adulthood, 70% of people worldwide are lactose intolerant. They do not produce sufficient quantities of this enzyme. Lactose intolerance is genetically based and occurs at high rates among people genetically associated with cultures where dairy animals are not native to the environment.

Lactose intolerance varies among peoples. African natives and peoples from Asia have the highest rates (80–100%), followed by African Americans and Indigenous Meso-Americans (70–80%), Mediterraneans and those of both Ashkenazi and Sephardic Jewish descent (60–90%), and northern Europeans (1–5%). However, in keeping with our understanding of culture and biochemical individuality, understanding the dominant genetic influences is what counts. For example, the Maasai of northeastern Africa are herding people and drink raw milk mixed with bovine blood. This contrasts with people on the West Coast of Africa, who do not drink milk. Hence, the origins of one's ancestors, coupled with the admixture with Europeans, African Americans, Asians, and other peoples, will ultimately determine these types of food allergies and intolerances. This will be true for everyone. Some people can handle small amounts of lactose without triggering a reaction. Some people with lactose intolerance may be able to tolerate dairy products that have a high fat content, such as butter or pure cream, since the lactose content is about 1–3% in these products. Yogurt and other fermented dairy with live cultures can generally be consumed due to bacteria converting lactose to lactic acid, resulting in 2% lactose. However, note that most commercially available "fermented" products are *not* fermented and do *not* have live cultures.

Many processed foods contain lactose (see Section I.2 in Appendix I for a list of foods containing lactose). It is important to read food labels and check for milk, lactose, whey, curds, dry milk solids, nonfat dry milk powder, and milk by-products. As a rule, I discourage most children and adults from regularly drinking bovine milk or eating bovine cheese. There is an association between milk allergy and otitis media in children and chronic sinusitis that can result in excessive and fruitless antibiotic use (see Section

H.4 in Appendix H for a recipe to make your own oat milk as an alternative to dairy).

Casein

Casein is the most abundant protein in cow's milk and in small quantities in sheep and goat milk products. Products with higher protein content, such as yogurt, cheese, kefir, milk, and ice cream, tend to be higher in casein. Butter and cream contain only small amounts of casein. Casein is often added to nondairy cheeses to give them the melting quality of real cheese (see Section I.2 in Appendix I for a list of foods containing casein and dairy alternatives).

There are two different beta-casein proteins, A1 and A2. The A1 beta-casein produces an opioid-like peptide, known as beta-casomorphin-7, which is implicated in inflammatory processes (Kay et al., 2021), schizophrenia, depression, and the autism spectrum. Milk derived from cows that produce only the A2 casein protein is a preferable food source.

Casein hydrolysate is the major ingredient in a milk-derived anxiolytic called lactium, which is well tolerated and effective. Hydrolysate proteins are broken down into much smaller peptides during digestion so that they do not lead to casomorphins and, therefore, do not appear to contribute to mental health reactions.

Gluten

Gluten (think "glue") is composed of the proteins gliadin (a prolamin protein) and glutenin, which can cause immune system reactions. Approximately 50% of those who are sensitive to dairy are also gluten intolerant. Gluten reactions occur along a spectrum; type 1 is celiac disease, an autoimmune response, and type 2 is nonceliac gluten sensitivity (NCGS). Celiac disease is a genetic autoimmune reaction to gluten that causes damage to the small intestine, preventing the absorption of essential nutrients. I have been examining throughout this book the contribution of gluten and its various proteins to mood disorders and psychosis and suggesting its elimination from the diet is a priority.

NCGS is more common than celiac disease. In NCGS, gluten does not always cause intestinal damage, and it does not trigger tissue transglutaminase antibodies. Undiagnosed NCGS should be suspected and ruled out in depression, dementia, ADHD, skin disorders, joint pain, headaches, schizophrenia, and the autism spectrum.

Wheat, wheat germ, wheat grass, bulgur, couscous, farina, graham flour, kamut, matzo, seitan, semolina, triticale, barley, rye, buckwheat, pearl barley, oats (unless they specify gluten-free), oat bran, oat fiber, and spelt all contain gluten/gliadins. Some people who are gluten intolerant are able to handle small amounts of gluten (see Section I.1 in Appendix I for a list of foods that often contain gluten).

Many foods cross-react with gluten, which means that their proteins are similar enough to cause a reaction. Casein, yeast, oats, sesame, and instant coffee are among these.

Gluten-Free Diet

The easiest way to withdraw from gluten is to follow a 7-day high-protein diet that eliminates all glutenous grains and packaged foods with added gluten protein. Generally the physiological craving for gluten and carbohydrates has diminished significantly after 7 days, but the gluten free diet should be followed for a minimum of three months to allow for healing the sensitive mucosa in the small intestine. Use root vegetables such as sweet potatoes, yucca (manioc or cassava), parsnips, carrots, and squash to satisfy the need for fiber and something sweet. There are many gluten-free carbohydrate substitutes such as milled flours: rice, potato, coconut, almond, buckwheat, sorghum, sweet potato, bean/cassava/rice mixtures, and tapioca. Gluten sensitivity can co-occur with glucose dysregulation and mood lability. It is very effective to eat a hypoglycemic type of diet (see Appendix A for hypoglycemic diet guidelines), ensuring the intake of proteins every three to four hours. This will help stabilize mood. It requires three to six months for the intestinal inflammation associated with gluten sensitivity to heal leading to improvement in joint stiffness and depression. In cases of sensitivity, it is always wise to eliminate all gluten products. In mild cases of carbohydrate addiction, it is possible to reintegrate the use of carbohydrates with gluten on some special occasions without adverse effects. However, like alcohol addiction, some people do better than others with total abstinence.

Glutamine and Dipeptidyl Peptidase IV

During gluten elimination, use 5–10 g glutamine powder twice a day to help heal the intestines. People with celiac or NCGS benefit from using dipeptidyl peptidase IV (DPP-IV), a digestive enzyme that breaks down gluten in the event of accidental exposure while eating away from home.

There are many satisfying options for gluten-free foods, as shown in Box 5.3 (see Section I.1 in Appendix I for a list of gluten-containing foods and gluten-free alternatives).

Box 5.3

Recipe: Gluten-Free and Casein-Free Pancakes Topped With Fruit Sauce

Children and adults alike love pancakes, but they ordinarily contain poor-quality flour and sugars. However, these pancakes are ideal for everyone. They are light, fluffy, sweet, and satisfying, making a wonderful morning meal. Place one or two poached eggs on the side with organic bacon or sausage for a glucose-balancing meal.

Makes 2–4 servings

Dry Ingredients

1¾ cups rice flour

¼ cup buckwheat flour

¼ cup almond flour

1 tablespoon ground chia seeds (for fiber)

1½ teaspoons baking powder

¼ cup tapioca flour

pinch of sea salt

Wet Ingredients

1 cup almond milk or coconut milk

1 cup water (or as needed)

1 tablespoon vinegar

2 eggs, beaten

4 tablespoons coconut oil, melted

4 drops of liquid stevia

1 teaspoon vanilla extract

Sauce Ingredients

1 cup frozen organic berries or larger fruits chopped (e.g., mango or pineapple)

1 tablespoon organic butter

1–4 drops of stevia, to taste

Making the Sauce

1. Defrost frozen berries or other fruits like mango and pineapple and lightly heat in a pan with added butter and stevia.
2. Bring to a near boil, simmer for a few minutes, and decant into a syrup bowl with a spoon to pour over the top of the pancakes.

Making the Pancakes

1. Whisk together the dry ingredients in a large mixing bowl.
2. In a separate bowl, whisk together the wet ingredients.
3. Add the wet ingredients to the dry ingredients and mix until almost smooth. The consistency should be pourable; if it is too thick, add more water or milk. Let sit for about 10 minutes to blend and hydrate the chia seeds. It should show signs of little gas bubbles due to the vinegar/baking powder reaction.
4. Lightly grease your pan or griddle with coconut oil and heat over medium-high heat.
5. When the pan is hot, use a ladle to pour the pancake batter into it. (Turn the heat down if the first cakes are a bit scorched.)
6. Wait until bubbles form in the pancake and the edges look cooked, then flip the pancake with a spatula. Cook for another minute or two until firm, then serve. Repeat with the rest of the batter.

Serving Suggestions

Pour warm sauce over pancakes as you serve them. Top pancakes with butter, fresh berries, almond butter, yogurt, and/or nuts. *Tip:* Pancakes are best when eaten immediately, but if you need to keep the pancakes warm, use a large, shallow serving bowl and place a towel inside of it. Wrap the pancakes in the towel. This will keep them warm and prevent them from drying out.

Always Read the Label

The key to understanding the gluten-free diet and the additive-free diet is to read labels. Gluten is found in many foods and is used as an additive, so gluten is hidden in prepared and packaged foods—just because it is not listed does not mean it is not there. However, there are many gluten-free foods and bread/grain substitutes.

Choose from many fresh, healthy foods like fruits, vegetables, beans, dairy, nuts and nut flours, sweet potatoes, buckwheat, amaranth, potato flour, and gluten-free grains like sorghum or rice. Millet is highly nutritious, versatile, and easy to prepare. It is rich in iron, B vitamins, and calcium, and it can be used as a breakfast cereal with butter and sweet juice added, mixed with cheese, or used with vegetables or animal proteins as desired, and buckwheat is another excellent option for a gluten-free complex-carbohydrate food (see Section H.4 in Appendix H for instructions on how to cook millet and buckwheat). The best options are the natural flours made with nuts and seeds and flours made from coconut, almond, rice, potato,

and tapioca. All commercial oats are contaminated with gluten. To be sure about the quality of the oats, obtain certified gluten-free oats.

Gluten and Alcohols

Most beer is made from grains and therefore contains gluten. Other alcohols, such as scotch, rye, and vodkas, while made from glutinous grains, are distilled, which removes the gluten, thereby making them safe to consume. Do keep in mind that alcohol, when mixed with gluten in food, magnifies the reaction in sensitive individuals and therefore should be avoided. Further, many patients who have celiac disease or who are gluten sensitive have a poor reaction to alcohol.

Corn

Corn is a challenging food allergy, as corn is prevalent in foods produced in the United States. From cornstarch and corn syrup to ingredients like dextrose, it is difficult to find packaged foods that do not contain some form of corn (see Section I.3 in Appendix I for a list of foods that commonly contain corn). While not considered one of the top eight food allergens, corn allergy is becoming more common in the United States and corn-producing countries in Asia and Africa. Perhaps due to the presence of corn in our diets, allergic reactions to corn are increasing. The symptoms of corn allergy are similar to other food allergies and can range from mild to severe.

Most corn in the United States is now genetically modified. Genetically modified organisms (GMOs) are plants or animals that have been genetically engineered with DNA from bacteria, viruses, or other plants and animals. More than 40 countries, including many in the European Union, and numerous Indigenous nations have placed restrictions or bans on the import, production, and sale of GMO foods. In the United States, genetically modified (GMO) technology is primarily used in food crop production, often involving the herbicide glyphosate. This widely applied chemical, frequently associated with GMO crops, is classified as a probable human carcinogen. GMO foods should be avoided. Mosaic Diagnostic is a company that tests for glyphosate levels via urine sample.

Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols (FODMAPs)

FODMAPs are a group of short-chain carbohydrates that are poorly absorbed in the small intestine where they ferment and cause symptoms like bloating, gas, diarrhea, and constipation, especially in people with irritable bowel syndrome (IBS). Xylitol and erythritol, sugar alcohols used as sugar

alternatives in foods, candy, and chewable nutritional supplements, are FODMAPs that can cause digestive problems. Xylitol is deadly to dogs, and recent research in humans suggests xylitol increases the risk of cardiovascular disease (Witkowski et al., 2024). FODMAPs include the following:

Oligosaccharides. Includes fructans (found in foods like wheat, garlic, and onions) and galacto-oligosaccharides (found in legumes such as beans and lentils).

Disaccharides. Mainly refers to lactose, which is found in dairy products such as milk, yogurt, and soft cheeses.

Monosaccharides. Refers to excess fructose, found in foods like apples, honey, and high-fructose corn syrup.

Polyols. Sugar alcohols like sorbitol and mannitol, found in stone fruits (e.g., plums, peaches) and some artificial sweeteners (e.g., sugar-free gum, candies).

A low-FODMAP diet is used to manage symptoms of IBS and other functional gastrointestinal disorders by reducing the intake of these fermentable carbohydrates. This diet involves initially eliminating high-FODMAP foods for 4–6 weeks and then gradually reintroducing them to identify specific triggers (see Section I.7 in Appendix I for a list of foods containing FODMAPs).

Histamine

Histamine is a neurotransmitter released from mast cells. While necessary for healthy immune system function, high levels of histamine cause allergic reactions, influence mood, and can cause psychosis (Ma et al., 2023). High levels of systemic histamine are also associated with OCD (Carthy & Ellender, 2021), oppositional defiant disorder, and seasonal affective disorder. People who are histamine sensitive may experience anxiety, headaches, migraines, mood lability, itchiness, and have hives and asthma. Histamine is found in fermented foods like red wine, aged cheese, and sauerkraut (see Section I.4 in Appendix I for a list of foods containing histamines). A low-histamine diet may lead to improvement. This means eating only fresh food, not leftovers, and avoiding overripe fruits and

vegetables, additives, fermented foods, processed and smoked meats, eggs in large amounts, citrus fruits, tea, chocolate, and alcohol.

Salicylates

Most people can handle moderate amounts of salicylates in food; some are intolerant of even small amounts of salicylates and experience adverse reactions. This is called “salicylate sensitivity” or “salicylate intolerance.” Symptoms of salicylate intolerance are associated with anxiety and depression, and they are found in people who experience multiple-chemical sensitivity (MCS). Sensitivity to foods containing salicylates has been shown to contribute to ADHD in some children (Stevens et al., 2011). Many plants, like willow bark, naturally contain salicylates, which act as an immune hormone and preservative that protects the plants from harmful bacteria, fungi, insects, and diseases. Synthetic salicylates are found in medications (like aspirin), perfumes, and preservatives (see Section I.5 in Appendix I for foods and products that are high in salicylates). Adverse effects may be seen when a certain amount of salicylates is consumed or if salicylates accumulate in the body over time. The natural and the synthetic forms of salicylates harm everyone in large amounts. Symptoms of salicylate sensitivity may include depression and anxiety; asthma and breathing problems; headaches; nasal congestion; itching, skin rash, or hives; swelling of the hands, feet, and face; and stomach pain. A personalized low salicylate diet was found to improve symptoms (Kęszycka et al., 2021). A case report found 10 g fish oil daily reduced severe symptoms of salicylate intolerance (Healy et al., 2008).

Sulfites

Sulfites, kin to sulfur dioxide (SO_2), are chemicals used as a preservative and food additive. They are commonly added to wine to stop the fermentation process and preserve it. Organic wines tend to have a lower content of sulfites. Generally, white wines and sweeter wines contain more sulfites. Sulfites are also added to dried fruits as a preservative. They may be a hidden ingredient in frozen shrimp and some beverages and medications.

Sensitivity to sulfites may cause symptoms such as mood lability, headaches, sneezing, asthma, throat swelling, and hives. People with asthma tend to be more at risk of having sulfite sensitivity.

Reading food labels is essential when trying to avoid sulfites. Things to look for include sulfur dioxide, potassium bisulfite or potassium metabisulfite, sodium bisulfite, sodium metabisulfite, or sodium sulfite (see Section I.6 in Appendix I for foods containing sulfites).

Nightshades

Nightshade foods are an essential factor in mental health. They can cause intestinal permeability and inflammation, leading to the use of pain medications and antacids. Consuming these medications causes nutritional deficits and adversely affects gut function.

Members of the plant family known as Solanaceae, nightshades comprise various plants and foods, including tomatoes, potatoes (excluding sweet potatoes and yams), eggplant, and peppers (excluding black pepper). Peppers include all spicy and mild peppers, from habanero and jalapeno chilies to cayenne and paprika. Additionally, the nightshade family includes ashwagandha, goji berries, cape gooseberries, ground cherries, garden huckleberries, and tobacco. Symptoms of nightshade sensitivity include muscle pain and tightness, arthritis, sensitivity to weather changes, morning stiffness, slow healing, gallbladder problems, heartburn, and GERD.

Test for Nightshade Sensitivity. Begin by conducting a self-inventory of pain and swelling of joints. Rate pain and stiffness on a scale of 1 to 10, with 10 being terrible joint pain and stiffness. Eliminate all nightshade foods during 4 weeks, and at the end of the period conduct another self-inventory. If you are sensitive to nightshades, you will feel better after 4 weeks without them. You can test this by returning to the use of nightshades for 1–2 weeks and observing that the pain and stiffness will return. Some people can sharply reduce their intake of nightshades and still tolerate them on occasion. If you enjoy barbecue sauce, see the nightshade-free Papaya Barbecue Sauce recipe in Box 5.4.

Box 5.4

Recipe: Papaya Barbecue Sauce

This is an exotic and healthy alternative to traditional barbecue sauce. If you want to make an anti-inflammatory, nightshade-free version, just leave out the crushed red chili pepper. Use the sauce over animal protein or tofu in the same way you might use a tomato-based sauce.

Makes 6 servings

Ingredients

1 tablespoon organic extra virgin coconut oil
1 medium onion, chopped
2 cloves garlic, minced
1 teaspoon crushed red chili pepper
½ teaspoon cumin powder
1 teaspoon oregano
1 cup dark brown sugar
5 drops liquid stevia
1 lime (zest and juice)
½ cup apple cider vinegar, to taste
2 pounds papaya, diced
½ teaspoon sea salt
3–4 drops liquid smoke

Directions

1. Cook and stir onions and garlic in oil until onions are translucent. Add the chilies, cumin, and oregano.
2. Add sugar, stevia, lime, and apple cider vinegar. Bring to a boil.
3. Add liquid smoke, papaya, and salt. Return to a boil and simmer for 15 minutes.
4. Remove the mixture from the heat and allow it to cool. Puree in a blender until smooth.

General Treatment of Food Intolerances

- Reduce exposure to one food at a time to test reactivity.
- Identify healthy substitutes where possible.
- Increase supplemental digestive enzymes.
- Address mind/body memories to traumatic events and experiences involving food. Use hypnotherapy to decondition any reactivity.

Assessment Essentials and Elimination Diets

Conduct Specific Food Elimination Diet

The elimination diet is an effective and safe way to assess and treat food intolerances. Eliminating a food or food group for 3 weeks while monitoring symptoms allows sufficient time to observe symptom changes. If symptoms improve during this time, the food is reintroduced to see if it causes the symptoms to worsen. If symptoms improve when the food is

eliminated and return when the food is reintroduced, the food should be excluded from the diet for at least six months. Strict adherence to the diet is necessary for accuracy. Allow sufficient time for inflammation caused by the food to heal. Once an offending food is identified, eating it occasionally without symptoms may be possible. Still, this must be assessed individually only on special occasions (see Section K.1 in Appendix K for a Guide to Foods on the Elimination Diet).

After 3 weeks on the elimination diet, one food at a time is reintroduced for 1 day. For example, if you decide to end the elimination diet by reintroducing corn, you would add corn or a corn product to a couple of meals for 1 day. Then for the next 2 days you would not eat corn, but you would monitor to see if any reactions occur. If not, you can continue to eat corn, and after those 2 days, you can add another food back into your diet and follow the same process of 1 day with the new food and 2 days without monitoring for symptoms. The elimination diet and reintroduction phase should take about 5–6 weeks.

Among the first foods to start eliminating are grains containing gluten (wheat, bulgur, barley, rye, couscous, kamut, semolina, spelt, triticale, and oats), cow's milk (milk and cheese products), and soy, but any food or food group (salicylates, nightshades, additives) that can cause reactions can be eliminated (see Appendix I for foods to avoid and substitute in each of these categories).

Modified Elimination Diet

The Modified Elimination Diet (MED) is a more flexible and practical version of the standard elimination diet, designed to identify food sensitivities while being easier to follow. Instead of removing a broad range of foods, you eliminate the most likely triggers based on your symptoms, lab test results, and health conditions. It is used for a shorter period (2–3 weeks) before reintroducing foods to assess reactions. It is best to use the MED as a first step to identifying food intolerances without the strictness of a complete elimination diet.

The modified elimination diet comprises the following:

1. Begin by eliminating dairy products like milk, cheese, butter, and ice cream. However, it may be okay to continue eating small amounts of plain, unsweetened yogurt with probiotics.

2. Eliminate gluten and other grains that may cause reactions.
3. Drink a minimum of 2 quarts of water daily.
4. Avoid alcohol and products containing alcohol, as well as all caffeinated drinks, decaffeinated coffee, and herbal coffee (see Section K.2 in Appendix K for a Guide to the Modified Elimination Diet).

Chemical Sensitivities

Multiple Chemical Sensitivity

Multiple-chemical sensitivity (MCS) is also known as "environmental illness," "multiple allergy," and environmental intolerance. It refers to a range of severe symptoms related to chemical, biological, or physical irritants, or pollutants. Some common triggers reported in MCS include solvents, exhaust, volatile organic compounds (VOCs), chlorine, perfume, tobacco smoke, insecticide, new carpet, paint, pollen, pet fur, and dust mites. Understanding MCS is essential to mental health treatment because people with unexplained debilitating symptoms that go undiagnosed can experience significant mental health distress as a result. In my practice, every person suffering from MCS has experienced many years of chronic stress before diagnosis. Early-life events and high allostatic load affect the ability of the adrenal and immune systems to withstand significant environmental exposures. MCS sufferers are the proverbial canary in the coal mine. Many people are exposed to substantial toxins at work and at war that cause multisystem health reactions. Symptoms include fatigue, dizziness, headaches, chest pain, skin rashes, nausea, sleep problems, digestive problems, sore throat, coughing, wheezing, muscle pain and stiffness, itching, heartbeat irregularities, difficulty concentrating, memory problems, bloating, confusion, and mood lability.

Because there is no widespread or agreed-upon consensus about this syndrome, people are commonly misdiagnosed with somatic symptom disorder and illness anxiety disorder. While they may indeed benefit from psychological treatment, these individuals are often difficult to diagnose. These individuals are often ostracized or stigmatized when clinicians do not understand the science (Molot et al., 2023). The causes of their symptoms are wide-ranging and invisible. There are several theories as to how MCS is possible, including (1) enzyme depletion, (2) immune system disorder,

including systemic inflammation, (3) nervous system sensitization, (4) HPA axis dysregulation, and (5) challenges in Phase 2 liver detoxification. Employ a multisystem approach that reduces oxidative stress and inflammation, enhances mitochondrial function, optimizes detoxification of the liver kidneys and skin, and provides emotional support and enjoyable rehabilitation practices.

Neurotoxins

Neurotoxins and excitotoxins are substances added to foods that prevent nerves from functioning normally by interfering with their electrical activities. They are found in most packaged foods and include ingredients like dough conditioners; seasonings; yeast extract; carrageenan; maltodextrin; hydrolyzed vegetable protein; sodium fluoride; sodium caseinate; calcium caseinate; chicken, pork, or beef flavoring; disodium anything; smoke flavoring and anything called autolyzed; whey protein concentrate; natural flavors or spices; and additives such as glutamate and aspartate. Researchers and clinicians associate neurotoxins with the development of Alzheimer’s and Parkinson’s diseases. Neurotoxic food additives are mainly derived from proteins in the form of free glutamic acids. Next, I list the most prevalent neurotoxins to avoid.

Monosodium Glutamate

Monosodium glutamate (MSG) is a flavor enhancer added to many processed foods, especially of Asian origin. It is a natural sodium salt of glutamic acid. It is usually made from fermented corn, rice, or potatoes. Animal studies repeatedly show that refined MSG causes depression and anxiety (Kraal et al., 2020; Quinesa, et al., 2014). Both MSG and aspartame disrupt cognitive function and increase animal oxidative stress (Abu-Taweela et al., 2014). Calendula, turmeric, green tea (Hajihasani et al., 2020), magnesium, and Vitamins C and E protect against MSG exposure (Tawfik & Al-Badr, 2012).

Natural Flavors

While natural flavors are derived from natural foods like fruits and vegetables, they are also isolates of those foods and can become toxic. When consumed as part of the whole fruit or vegetable, the other compounds present balance them. In addition to “natural flavors,” which

sound harmless, many companies use the term “spices” to refer to neurotoxic ingredients. Foods with natural flavors added are to be avoided.

Hydrolyzed Vegetable Protein

Found in junk foods, hydrolyzed vegetable protein is high in glutamate and aspartate, which overstimulates nerve cells and leads to cell death.

Artificial Sweeteners

Sodas with sugar and diet sodas are some of the first substances to be eliminated from the diet. Diet sodas have excitotoxins like aspartame. Ironically, they have been shown to cause weight gain and diabetes. Artificial sweeteners (saccharin, sucralose, or aspartame) disrupt intestinal gut microbiota and alter glucose metabolism (Suez et al., 2014). Caffeine-rich sodas contribute to anxiety and insomnia, and regular consumption of sugar-sweetened soda alters DNA, causes liver cancer, and shortens lifespan (Lane et al., 2024; Leung et al., 2014; Zhao et al., 2023). Withdrawal involves withdrawal from sugar (or artificial sweeteners) and often caffeine. Soda drinking is a common habit linked to work.

Aspartame

Manufactured by a Japanese company called Ajinomoto, aspartame (L-aspartyl-L-phenylalanine methyl ester) has many other names, including Equal®, NutraSweet®, Benevia®, Spoonful®, and more recently AminoSweet®. Aspartame is an artificial sweetener in sugar-free products like gum and drinks. It is most often made from the feces of genetically modified bacteria. Aspartame breaks down into methanol, which is then converted into formaldehyde. At low levels with long-term exposure, formaldehyde damages the nervous system and immune system and causes irreversible genetic damage. Aspartame is a rodent chemical carcinogen (Landrigan & Straif, 2021). The International Agency for Research on Cancer has classified aspartame as “possibly carcinogenic to humans.” Research links aspartame to serious illnesses, including depression and irritability, with significant negative effects on metabolic health (Czarnecka et al., 2021; Lindseth et al., 2014), migraines, oxidative stress, diabetes, seizures, blindness, obesity, and neurological disorders (Soffritti et al., 2014). A significant body of research has shown that aspartame, along with other food additives, causes neurological, psychiatric, and behavioral disorders and is associated with headaches, pain, and panic. People with a history of depression, pregnant women and lactating mothers, the elderly,

and young children appear to be especially vulnerable (Guo et al., 2014; Walton et al., 1993).

Sucralose

Sucralose, or Splenda®, is an artificial sweetener used in sugar-free products. This chlorinated compound is a cousin to the chemical DDT. The body breaks down chlorinated compounds like sucralose, releasing toxic chemicals.

Beverage Sweetener Alternatives

I encourage people to make their sodas by purchasing mineral water and flavoring with frozen fruit, honey, monk fruit, or a few drops of stevia. See the recipe in Box 5.5 for a Raspberry Lime Rickey.

Box 5.5

Recipe: Raspberry Lime Rickey

This is my adaptation of my hometown summer favorite. It has helped many people withdraw from cola and other soft drinks.

Makes 1 serving

Ingredients

- Crushed ice
- Juice from 1 lime
- ½ cup frozen raspberries
- 1 glass sparkling mineral water
- 1 to 5 drops liquid stevia or monk fruit, or dark agave syrup to taste

Directions

Fill the glass with ice. Add lime juice, raspberries, sparkling water, and sweetener; stir to combine.

Elimination of Dietary Food Additives

The Feingold Diet

The Feingold diet was developed for ADHD and behavioral disorders by Dr. Ben F. Feingold, a pediatric physician specializing in allergies. This

food elimination program is designed to identify food additives in the diet that may be causing symptoms like hyperactivity. Foods containing artificial dyes, preservatives, and flavors are eliminated permanently from the diet, while some fruits and vegetables are eliminated but later reintroduced based on tolerance. Food dyes are petroleum-based and are contaminated with mercury, lead, and arsenic (Bakthavachalu et al., 2020). Food additives include dyes (red 3, red 40, blue 1, blue 2, green 3, etc.) and artificial flavors, artificial sweeteners (Equal®/aspartame, Splenda®/sucralose), and preservatives (BHA, BHT, TBHQ). Salicylates are eliminated. The Feingold program provides lists of foods that are to be eliminated.

Benefits

The Feingold diet benefits children and adults with symptoms of hyperactivity, impulsiveness, compulsive behaviors, and mood lability; learning problems, such as short attention span, neuromuscular problems, and cognitive and perceptual problems; and health problems, like asthma, bedwetting, ear infections, eczema, hives, seizures, and sleep problems.

Cautions/Deficiencies

Incorporating this approach alongside other diets poses no problems. Eliminating all these additives is beneficial for everyone.

Water

We are made up of water. Think of a giant balloon filled with water and a big fat globule called the brain at the top. That's our body. Dehydration contributes to fatigue, depression, and toxicity. Ensuring that we drink enough water daily is a self-care priority. To calculate how much water you need as an individual, see Box 5.6.

Box 5.6
Calculate Your Requirements for Water

I suggest my clients fill water glasses and place them in every room they visit during the day so they will drink their required daily fluid. (Coffee and black teas do not count toward the total, but herbal tea and broths do.) Generally, we need to drink 30–50% of our body weight in ounces of water daily. Calculate your body weight and divide it in half. These are the

number of ounces of water to drink daily. For example, 150 pounds equals 50–75 ounces of water daily.

Heavy Metals

Heavy metals are well-established causes of mental illness, particularly learning disorders (lead, molybdenum) and cognitive decline (arsenic, mercury, aluminum, lead). With mercury in dental amalgam, air pollution, and the widespread use of chemicals in the food supply, it is impossible to avoid exposure. One hopes to reduce exposure and eat foods that aid the body in eliminating what has been stored. See the Resources section at the back of the book for options to test hair and blood for heavy metals.

Aluminum

Exposure to aluminum occurs at higher rates than any other known metal neurotoxin. Aluminum exposure and high levels in brain tissue are correlated with cognitive decline and Alzheimer's disease (Bhattacharjee et al., 2014; Zhang et al., 2021), in large part because of the inflammation and oxidation it causes. It is found throughout the environment—in the air, water, soil, medicines, and foods. Aluminum is naturally found in all foods; however, additives like coloring, preservatives, and leavening agents contribute much larger aluminum compounds. Aluminum is also in processed cheeses, spices, pickles, and baked goods. It is also commonly present in drinking water, antacid medications, cookware, foil, and vaccines, the latter of which contributes to the majority of aluminum toxicity cases since it is frequently injected into the body. Maintaining higher levels of magnesium can be protective against aluminum absorption.

Methods to Avoid Aluminum Exposure

- Do not take antacids that contain aluminum hydroxide.
- Avoid using aluminum cookware.
- Do not use aluminum foil.
- Do not use antiperspirant spray if it contains aluminum chlorohydrate.

Mercury

Mercury is a toxic metal that easily destroys brain tissue and can cause memory loss, ataxia, fatigue, depression, and neurological disturbance. Most mercury in the diet is obtained through seafood and fish products, which can contain high mercury concentrations. Other sources of mercury in the body can derive from bleaching skin creams, calomel laxatives, cosmetics, hemorrhoid suppositories, photographic supplies, vaccines, and contact lens solutions containing thimerosal. Some multidose flu vaccines may still contain thimerosal, and you may request a vaccine without this additive.

Elimination of Heavy Metals With Nutrition

When protein is deficient in the diet, toxic metals like cadmium, lead, and mercury are more easily absorbed and retained. The sulfur compounds in proteins protect the cells from heavy metal toxicity. Sulfur is necessary for the methylation process of detoxification. Sulfur is rich in animal proteins, fish, garlic, and onions. Supplemental niacin also works to detoxify the liver. The cruciferous vegetables, like cabbage, broccoli, and brussels sprouts, enhance detoxification enzymes (see Section H.3 in Appendix H for a selection of recipes using raw, cooked, and fermented cruciferous vegetables), and sulfur-containing onions and garlic, both raw and cooked, are most beneficial when used daily. Seaweeds are a significant detoxifying food source (particularly kelp with its natural sodium alginate compound built-in). Sea plants with sodium alginate bind toxins in the intestinal tract, drawing them from the body's cells. Adding seaweed to soups or bean dishes or as a snack is healthy for the thyroid. Alginates from brown seaweeds bind toxic metals to the digestive tract (Eliaz et al., 2007); capsules combining sodium alginate from brown seaweeds and modified citrus pectin can be used every three months to reduce heavy metals. Coriander, also known as cilantro or Chinese parsley, is a powerful antioxidant that has been demonstrated to remove heavy metals from the body. Incorporate cilantro in your recipes like the one shown in Box 5.7.

Box 5.7

Recipe: Cilantro Pesto

This healthy and delicious pesto can be used on gluten-free pasta or rice or as a dipping sauce for vegetables. Its added benefit is that it chelates (removes) heavy metals from

the body. Double the recipe and freeze it in small containers so it can be pulled out for a quick meal.

Makes about 2 cups

Ingredients

- 2 cups firmly packed organic cilantro leaves and stems
- 2 cups firmly packed organic Italian, flat leaf parsley leaves and stems
- ½ cup chopped organic walnuts
- ½ cup organic olive oil
- 1 teaspoon kelp powder
- ¼ teaspoon sea salt
- 2 garlic cloves

Directions

Using a food processor or blender, mix all ingredients until smooth.

Eliminating Toxins in the Home

Environmental toxins are linked to a variety of mental health problems. Exposure is hazardous in pregnant women and during the first years of life, but exposure at any stage is harmful. Although we cannot eliminate all exposures, we can reduce risk where we have control. This starts in the home with cleaning products and outside the house with pesticides or fertilizers, as well as detoxifying fruits and vegetables before consumption. To eliminate pesticides and fertilizers from produce, fill a sink with water and add ½ cup of either hydrogen peroxide or bleach. Let the vegetables and fruits soak for 5 minutes, then wash, rinse, and dry thoroughly. Look underneath your sink and in your garage for toxic cleaning supplies and drain and oven cleaners. If you have bought cleaning supplies in the grocery store, they will be toxic. Throw out any toxic cleaning supplies. Replace them with a mixture of white or apple cider vinegar and water. Vinegar is a powerful antibacterial, antimold, and antifungal cleanser, and it is less expensive than cleaners. If you like, add a little essential oil with your favorite fragrance. This mixture can clean dishes, counters, floors, toilets, and tubs. If you need to scrub, just add some baking soda and salt. Also, avoid dry cleaning and mothballs; use essential oils like cedarwood, lavender, and peppermint.

Mold and Mycotoxins

Mold is a type of fungus that grows in damp, warm environments, such as water-damaged buildings and improperly stored food. It grows more readily in humid climates that depend on air conditioning and can develop in showers and refrigerators. Certain molds, including *Aspergillus*, *Penicillium*, and *Stachybotrys*, produce mycotoxins. These toxins can contaminate indoor environments and foods like grains, nuts, and fruits. For example, *Aspergillus flavus* and *Aspergillus parasiticus* lead to aflatoxin grown on peanuts, which can damage the liver, which is why it is best to minimize or avoid peanut butter use.

Exposure to mycotoxins, whether through inhalation, ingestion, or skin contact, can negatively affect mental health. Symptoms can include cognitive dysfunction, mood disorders, fatigue, and anxiety due to the toxins' effects on the nervous system and immune system. Long-term exposure has been linked to more severe neurological and psychological issues. I have worked with many clients where mycotoxin exposure was a hidden influence on persistent chronic fatigue that resolved once mold exposure was eliminated and detoxification successful.

Testing

Mycotoxin testing is usually done through urine samples. There are options for mold testing and remediation in the home. Elimination protocols are developed depending upon the mycotoxins, and they include the use of binders like activated charcoal, bentonite clay, or cholestyramine, liver support like liposomal glutathione or NAC, milk thistle, sweats, saunas, skin brushing, and coffee enemas. Eliminating the culprit and, hence, exposure is necessary.

Mold and Toxin Testing (Human): MycoTox urine collection for system mycotoxin levels and types (Mosaic Diagnostics)

Environmental Relative Moldiness Index (ERMI): an at-home test kit for collecting dust and assessing mold levels in the home (see the Resources section at the back of the book)

Food Addictions, Cravings, and Orthorexia

When people are addicted to fast foods, such as those containing high levels of sugar and salt, they become inured to taste and lose the ability to taste foods in their natural state. Our work is to educate clients that they are in the process of learning to perceive these tastes. Processed food tastes are artificial and much more potent, so they blunt the capacity to taste and appreciate the authentic flavors of foods. People may be unaware of this, which leads them to say they do not like certain foods or simple foods that "don't taste like much." Someone who salts heavily with table salt may not be able to taste the saltiness of sodium in celery and may feel the need to salt celery and other foods. This exemplifies how people have overwhelmed and excited their taste buds and inner chemistry. Part of the whole process of changing food and dietary patterns and addictive processes is to slowly eliminate these high-stress excitotoxins as they are replaced with their natural counterparts.

Cravings

Several factors contribute to food cravings:

- Nutrient deficits may cause people to crave food that provides the nutrients they need. This is known as "cravings as self-medication."
- Specific foods are formulated to be addictive and lead to cravings, mainly processed foods. This is "cravings as addiction."
- People who are allergic to foods can experience cravings for those foods; this is known as "cravings as allergy/sensitivity."

Mood affects food cravings, and food cravings also affect mood. Cravings are complex and may derive from several causes. Understanding the foods, the time of day, the food-as-self-medication factor, food allergies, and mood before cravings is essential and can be reviewed during the assessment process. Hormones contribute to cravings. Ghrelin is the hormone that cues hunger and responds to chrono-nutrition. Sleep and ghrelin interact; the less one sleeps, the more one is hungry, leading to obesity. Gastric bypass decreases ghrelin levels initially, though they rise again over time. Cholecystokinin and PYY cue satiety by slowing the emptying of food by the stomach, and PYY signals satiety in response to protein, supporting the idea that protein provides more satiety than carbohydrates. People have different levels of each hormone, which can account for the ranges in

appetite and cravings. Semaglutide reduces cravings and appetite (Blundell et al., 2017). Certain foods dysregulate these hormones, and boredom and anxiety can precede food cravings. People who are tense and distressed may crave sweet carbohydrates and feel more relaxed after eating. At the same time, protein craving is often related to anxiety and hunger and is followed by more energy.

Nutritional deficiencies also contribute to food cravings as part of the self-medication response. Women tend to crave carbohydrates and sweet goods during the luteal phase (around midway through the menstrual cycle), which suggests the need to increase dietary tryptophan and serotonin.

Decreasing the negative effects of cravings on health requires a multifaceted approach, including understanding the types of foods being craved and how they alter mood, identifying nutritional substitutes, and using cognitive-behavioral management methods to decrease craving behaviors.

Nutritional and Behavioral Tips for Dealing With Food Cravings

- Reduce stress to help avoid the tendency to reach for addictive substances as a coping mechanism.
- Keeping addictive foods out of sight can help keep them off of your mind.
- Identify foods that precede or trigger your cravings and avoid them.
- Engage in alternative strategies for attention such as computer games, relaxation, and exercise.
- Drink water throughout the day.
- When a craving is for a comfort food not in alignment with your diet goals, substitute something healthy instead.
- Just rinsing the mouth with starchy carbohydrates triggers brain response and increases energy.
- Plan for snacks ahead of time, so if you grab something, it is healthier but satisfying.
- Allow some compassion with your cravings, but in small portions; for example, allow craving responses twice a week and not every night.

Nutrient Supplementation for Reducing Cravings

- Vitamin B complex is useful in raising serotonin levels, and improving mood and the body's ability to metabolize carbohydrates.
- Chromium and L-glutamine both help regulate blood sugar levels and can reduce cravings for carbohydrates and sugars.
- Fish oil helps reduce cravings for sugar by enhancing insulin sensitivity.
- L-tyrosine supports the production of dopamine that contributes to improving mood.
- Magnesium is useful in reducing stress, balancing blood sugar, and improving sleep.
- D,L-phenylalanine increases endorphin levels, and tryptophan raises serotonin levels and reduces cravings for carbohydrates.

Orthorexia Nervosa

Orthorexia, from the Greek *orthos*, meaning "correct or right," and *orexis*, meaning "appetite," refers to a fixation on a way of eating that is characterized by an unhealthy obsession with what is considered healthy. There may be a feeling of superiority over others with less healthy eating habits, and there is an obsession with how much to eat, what types of food, the quality and purity of the food, and a tendency toward self-punishment if the diet is not strictly followed. A sense of self-righteousness is common. Social isolation may result from orthorexic tendencies, or people with similar dietary inclinations and philosophies may form together in communities. It may include self-abnegation and take the form of increased dietary restrictions, fasting, and exercise. Health may suffer if orthorexia becomes severe and as foods become so restricted that calories and the variety of nutrients are reduced.

Orthorexia can be related to a need for control, a fear of poor health, a desire to be thin, spiritual purity or other spiritual reasons, asserting identity through food choices, and self-esteem. There are some similarities between the symptoms of orthorexia nervosa and obsessive-compulsive disorder (Donini et al., 2004). Assessing whether or not healthy eating choices have become obsessive is the practitioner's role. Dietitians and people in the nutrition profession have higher rates of orthorexia (Ephrem et al., 2024).

This is likely similar to the higher rates of people who become mental health professionals who also have a history of adverse childhood events.

Orthorexia can sometimes be mistaken for necessary, structured dietary practices essential for regaining health, particularly when clinicians are unfamiliar with the impact of diet and supplementation on mental health. This misdiagnosis is more likely in individuals managing chronic conditions, such as gluten sensitivities, MCS, or specific nutritional requirements that may appear excessive or obsessive. In my practice, I have observed orthorexia, especially in addiction recovery clients, in persons practicing veganism, raw food diets, vegetarian diets and the keto diet. Young people can also show symptoms in response to group bonding. Survivors of various cults may also experience symptoms. These dietary choices and attitudes often reflect stage-of-life developmental processes associated with identity development and frequently change over time. In Box 5.8, I review an example of this process with the case of Suzanne.

Box 5.8
Suzanne's Story: The Health Challenges of an Orthorexic-Vegetarian Diet

Suzanne came to see me at the age of 24, complaining of depression, fatigue, low energy, and lots of bloating that caused discomfort. Suzanne had been a vegan for 7 years. She was in a relationship with a partner who introduced her to veganism. It became clear after a series of tests that while she was a vegan for spiritual and environmental reasons, her body and mind were suffering from this diet. First, we did some testing. We discovered that she had intolerances to gluten and soy, two foods that had made up the majority of protein and calories in her diet. This was important for Suzanne to know. She was an intellectual, and it gave her some answers to things she had wondered about. She made slow, consistent changes to her diet, beginning with adding certain foods and excluding others. She started by reducing soy and gluten and eating eggs as her first animal protein. Almost immediately, Suzanne noticed an increase in her energy. Exercise that usually left her feeling fatigued became easier and more enjoyable. After a couple of months of including eggs in her diet, she also began incorporating fish. She continued this diet for a while but still experienced symptoms of low mood and fatigue. I encouraged her to try other animal proteins, but Suzanne said, "I feel uncomfortable chewing flesh. Also, my boyfriend Brad is upset with me about making these changes." We spent a few sessions discussing her relationship. She invited Brad in for a meeting with us to explore these issues.

Suzanne felt better with the changes she had made, but her improvements stalled. It took several months to make this next shift, but when she did, she noticed improvements in her overall energy and mood and began to feel more efficient. We worked together over many years to make these changes. Like many spiritually minded vegetarians, Suzanne had the belief that it was impure to eat animal flesh, and this sense of maintaining strict control over what went into her body reflected the need for her to stay sober after an

adolescence of heavy drug and alcohol abuse. It was also a reaction to gain control over a chaotic early-life experience with her family. This is not uncommon in people experiencing orthorexia and reflects a stage in their recovery.

I continued to work with Suzanne off and on for several years as she sought support. I focused on helping her pay attention to how her nutritional behaviors made her feel physically and emotionally as I suggested refinements in her dietary practices.

If I was too direct then I would repeat the patterns she had been in with other people who were often "making decisions" for her. Thus, my approach was to appeal to her intellectual understanding of dietary needs and then ask her to follow her intuition and what her "gut" told her she needed.

Diets and Their Value for Mental Health

There are as many diets as there are psychotherapies. Our clients frequently say to us that they follow certain dietary practices. Diet names come and go. But the basics of all diets are the same—the type, quantity, and food we take in, including the ratios of proteins, fats, and carbohydrates and how they nourish us. A diet that does miraculous things for our neighbor may not have that effect on someone else. Thus, we return to the concept of biochemical individuality. The diverse needs of individuals are lost in large nutritional studies which don't recruit based on the nutritional needs of the individual. The balance we seek for our clients is to help them identify what diets, or maps, might serve them, and like maps, there are several routes to get to the intended location, with one being more direct or scenic than others. The best approach for following a food system is to find one that feels "right" in the gut. Dietary needs shift over the life cycle as well. For example, orthorexia is common in young people who join groups based on belief systems. Still, they evolve out of the groups and beliefs or modify them, as I explored in the story of Suzanne. Illness, stress, pregnancy, or age may require a shift in dietary choices.

Understanding the benefits and deficits of particular diets enables us to counsel our clients. Remember the diet essential, *There is no one right diet for everyone*. We should ask if this diet is the correct one for this individual. People go through stages when it comes to making dietary changes. During our assessment, we review the variables that affect one's dietary and food preparation choices. People's ability to taste subtle flavors improves as they explore new food, preparation methods, and textures. It is unrealistic to think that most people will go from a SAD diet, high in fast food, to a paleo or keto diet in a few months, though some do. More often, people make

incremental changes. We usually think that our clients will jump at the chance to feel better faster, and some will, but many who have felt badly for a while need time to learn how to change habits and beliefs and even tolerate feeling good.

Identify which dietary changes are essential:

- Prioritize nutritional requirements.
- List health goals and link them to the dietary changes required.
- Identify where the fastest improvements will be experienced.
- Clarify which changes the client is willing to make and in what order.
- Identify appropriate substitutions for substances to be relinquished or reduced.

Next, I describe some effective diets that provide a spectrum of approaches to addressing biochemical individuality; they range from carnivores to mixed types to vegetarians. I have organized them according to what I believe is best adapted for mental health and then added additional specialty diets for health problems that intersect with mental wellness.

I previously suggested that one goal during the assessment process is to help clients consciously communicate between their second and first brains to identify their feelings, sensations and cognition when they eat certain foods and food combinations. When discussing dietary approaches with clients, I always ask them to pay attention to how the changes make them feel and not rely on what the “experts” say.

Gut and Psychology Syndrome Diet

Neurologist and nutritionist Dr. Natasha Campbell-McBride developed the Gut and Psychology Syndrome (GAPS) diet. The diet was developed to treat children (and adults) on the autism spectrum, ADHD, dyspraxia, dyslexia, and schizophrenia in particular, and it may be beneficial for everyone who is reactive to dairy and gluten. It focuses on reducing inflammation, gut permeability and the entry of toxins into the bloodstream. There are three main principles of the GAPS diet: (1) healing the gut, (2) restoring beneficial bacteria to the gut, and (3) detoxification.

The GAPS diet is undertaken in a series of stages, beginning with a very restrictive introduction phase, which includes only easily digestible vegetables and homemade broths, fats, boiled meats, and fermented

vegetable juices. All grains, starches, and sugars are eliminated from the diet. As digestive symptoms subside, more foods such as raw vegetables, eggs, juices, and nuts can be slowly added to the diet. The diet emphasizes a range of whole foods in their natural and fermented states, exceptionally healthy fat-rich butter, fermented foods, and eggs.

As emotional and mental health improves, one incorporates the full GAPS diet, which allows many whole foods but excludes grains, starchy root vegetables, sugars, and (unfermented) milk products. Some individuals can incorporate grains and dairy again, but others who are sensitive or allergic will not.

Benefits

The GAPS diet will help detoxify the body and repopulate the gut with healthy bacteria. It may reduce inflammation in the body and also improve mental health and overall well-being.

Cautions/Deficiencies

This diet is safe and effective for mental health disorders.

Carnivore Diets

Carnivore diets emphasize animal proteins, particularly raw or cooked meat. They vary by the number of other food categories included. Cultures as diverse as those indigenous to the Arctic and East Africa are primarily meat-eating cultures. The Atkins and paleo diets represent two approaches to a meat/flesh emphasis.

Atkins Diet (Carnivore)

The Atkins diet is a low-carbohydrate diet often used for weight loss. This diet is very effective in eliminating carbohydrate cravings. By lowering carbohydrate consumption, the body switches from using glucose for energy to using stored body fat in ketosis. Proteins and healthy fats are increased in the diet. Fruits, starchy vegetables, grains, breakfast cereals, flour, and sugars are restricted. The diet can then be used as a healthy weight management diet for life if your metabolism requires heavy proteins and low carbohydrates. It does not work for people who need more carbohydrates. It is possible to become deficient in Vitamins B-5, C, D, E, and K. Fiber, selenium, potassium, magnesium, and B-complex vitamins and minerals should be supplemented.

Benefits

This diet can be effective as a short-term (4 weeks) option for people who experience addiction to refined carbohydrates or who want to benefit from a high animal protein intake.

Paleolithic (Paleo) Diet

The paleo diet (Singh & Singh, 2023), also called the primal or cave person diet, is based on foods similar to the food groups eaten by hunter-gatherers in the preagricultural Paleolithic era. The diet is based on the belief that our Paleolithic ancestors did not have the current array of chronic diseases. The diet includes grass-fed meats, fish and seafood, nuts and seeds, vegetables, fruits, roots, eggs, and healthy oils while excluding dairy, carbohydrates like potatoes and refined flour and sugar, grains, legumes, refined salt, and refined vegetable oils. It is higher in protein and fat while reducing the intake of carbohydrates.

Benefits

It is high in protein, fat, fiber, and nutrients and low in carbohydrates and sodium. It is a superior diet for hypoglycemia and diabetes and is beneficial for mental illness, including depression, anxiety, and psychotic disorders.

Cautions/Deficiencies

Ensure sufficient fiber from vegetables and fruits, and obtain enough calcium and Vitamin D.

Modified Carnivore

This diet is similar to the paleo diet but allows dairy for people who are not sensitive to lactose or casein. This diet is also recommended for withdrawing from alcohol and sugar addiction.

Benefits

The diet is an excellent transitional diet when eliminating fast foods, allowing for satisfying animal proteins and fats. I recommend this diet to individuals who eat a diet high in poor-quality proteins and fats, and I ask them to instead eat better-quality animal proteins like free-range poultry, steak, hamburger, eggs, and good-quality cheeses in lettuce wraps as they detoxify from fast foods.

Cautions/Deficiencies

People with kidney disease and women who are pregnant or breastfeeding should check with their healthcare practitioner before undertaking this diet.

Low fiber intake can lead to constipation.

Ketogenic Diet

Originally developed to treat epilepsy in children, a ketogenic diet is high in fat and moderate protein, and low in carbohydrates. Between 50% and 80% of the calories on this diet come from fat, primarily high-quality butter, heavy cream, coconut oil, eggs, avocado, and raw nuts, with carbohydrates and protein making up the remaining 20–50% of the calories. The diet is used to reduce the frequency of epileptic seizures by inducing ketosis, in which ketone bodies are elevated in the blood. The ketones enter the brain as an energy source, replacing glucose, generally obtained from carbohydrates. When glucose is eliminated in the diet, the body is forced to burn fat for energy instead. High-carbohydrate foods such as starchy foods, sugar, and grains are avoided in the diet. The diet shows evidence of improving mental health (Norwitz et al., 2020; Rog et al., 2024), and adaptations of the ketogenic diet are being investigated for Alzheimer's and type 2 diabetes.

Benefits

The ketogenic diet can be an effective therapy for reducing seizures in epileptic children and youth, and it has also shown some benefits for children and adults with epilepsy.

Cautions/Deficiencies

Constipation, dehydration, and kidney stones or gallstones are the most common side effects of the ketogenic diet. Drinking plenty of water and incorporating fiber into the diet is essential to minimize these side effects. Qualified nutritionists, dieticians, or medical doctors and nurses should oversee the diet's administration.

Recommendations/Supplementation

This diet requires supplementation, as several important vitamins and minerals are deficient, including carnitine, calcium, magnesium, iron, and Vitamins B, C, and D.

Anti-Inflammatory Diet (Mixed/Balanced Metabolism and Lacto-Ovo-Pescatarian)

The anti-inflammatory diet is designed to reduce the intake of inflammatory foods. It emphasizes eating various fresh fruits and vegetables while

eliminating the intake of processed and fast foods. The diet comprises 40–50% carbohydrates, 30% fat, and 20–30% protein. Carbohydrates are low-glycemic, such as brown rice and bulgur wheat, beans, sweet potatoes, and winter squash. Animal proteins from fish and natural cheese and yogurt are emphasized, as are vegetable proteins. Other aspects of the diet include drinking tea instead of coffee, drinking red wine in favor of different types of alcohol, and eating dark (sugarless) chocolate in moderation.

Benefits

This diet is an excellent first-step approach for people in the process of changing their diets. It should be used for 2–4 weeks at a time. It is helpful for people with pain and depression. If it feels too restrictive, some of the inflammatory foods can be eliminated one at a time as beneficial foods are added. The diet is higher in carbohydrates than some people need, so people can still benefit by removing inflammatory foods such as wheat, corn, soy, dairy, nightshade vegetables, sugar, margarine, partially hydrogenated oils, alcohol, and peanuts.

Cautions/Deficiencies

Over time, people may want to add some saturated fats, and people who are more naturally carnivores will benefit from adding more animal-based proteins.

Recommendations/Supplementation

If animal proteins and fats are eliminated, it can be done short-term and periodically. This diet mistakenly suggests that saturated fats and animal proteins (meats) cause inflammation. Nevertheless, this cleansing diet can benefit almost anyone for short periods.

Balanced/Mixed Diets

Mediterranean Diet

The Mediterranean diet is based on the traditional foods of the Mediterranean region. The diet emphasizes many plant-based foods and whole grains, healthy fats like olive oil, fish, and poultry 2–3 times a week, red wine in moderation, and fresh fruit. Salt and red meat are reduced in the diet. Nuts are also essential to the diet as they are high in healthy fats. Butter, saturated fats, and hydrogenated or trans fats are discouraged in favor of monounsaturated fats (found in olive oil) and fatty fish, which are rich in omega-3 fatty acids. Exercise and eating with family and friends are

other components of the diet. Herbs and spices are used to flavor food and to help reduce the need for salt and fat. Low-fat dairy products are also encouraged over the full-fat varieties.

Benefits

The Mediterranean diet is best for the mixed-oxidizer and vegetarian-type diet. It has been shown to reduce the risk of Parkinson's disease, Alzheimer's disease, cognitive decline, and diabetes (Camprodon-Boadas et al., 2025; Godos et al., 2023).

Cautions/Deficiencies

The diet's requirements are very general, which may make it easy or difficult, depending on the client's personality.

Dietary Approaches to Stop Hypertension (DASH)

The DASH diet is designed to reduce the risk of heart disease and stroke by preventing or treating high blood pressure, as well as helping lower cholesterol (low-density lipoprotein [LDL] cholesterol associated with heart disease). The DASH diet has improved mental well-being (Tan et al., 2023).

The standard DASH diet limits salt to 2,300 mg per day (about 1 tsp of table salt). The lower sodium version limits sodium to 1,500 mg/d. Sugar, sugar-sweetened beverages, and sweets should be avoided, as well as saturated fats and trans fats. The DASH diet emphasizes foods rich in potassium, calcium, magnesium, fiber, and protein, including fruits, vegetables, and whole grains. It also includes fat-free and low-fat dairy products, poultry, fish, beans, nuts, and vegetable oils.

Tips for Reducing Sodium

- Look for low-sodium or no-salt-added food labels, or check the sodium content on the nutrition labels before buying.
- Most food should be prepared at home, but when eating out, ask about low-salt options or ask for no salt or soy sauce to be added to your food.
- Skip the salt when cooking pasta, rice, and hot cereal.
- Opt for fresh meat, such as skinless chicken or fresh fish, rather than smoked or processed meats.
- Try salt-free seasonings and flavorings.

Raw Diet

A raw foods diet consists of fresh, uncooked, and unprocessed foods ranging from raw vegan and vegetarian diets to raw omnivorous diets. A raw foods diet may include raw fruits and vegetables, nuts, seeds, sprouted legumes, and grains, and sometimes raw eggs, meat, fish, dairy products, and fermented foods. Foods may be either completely unheated or heated only at very low temperatures (below 104–118°F or 40–42°C) or prepared using a dehydrator. Other raw food preparation techniques include sprouting, blending, pickling, fermenting, and juicing. A common reason for consuming a raw diet is that raw foods contain beneficial enzymes that are necessary for digestion, and cooking foods destroy these enzymes. Raw foods also contain beneficial bacteria and microorganisms that improve digestion, immunity, and neurotransmitter production.

Benefits

Most people will benefit from including raw foods in the diet, but few require or will benefit from a 100% raw foods diet. Most people will benefit from including a range of raw foods ranging from 30% to 60% of total daily intake. Another way to work with raw food is to undertake a brief cleansing diet of raw foods that lasts from 3 to 10 days. Proponents of a raw foods diet believe it increases energy, decreases disease risk, and promotes weight loss. Raw vegan and vegetarian diets are lower in saturated fats and cholesterol and high in fiber, vitamins, minerals, and antioxidants. They are typically low in processed foods, trans fats, sodium, and sugar.

Cautions/Deficiencies

A raw foods diet is not right for everyone, and I do not recommend a raw diet long term for clients with mental illness. People who are underweight, suffer from diabetes or hypoglycemia, or have a history of eating disorders are not candidates for a raw foods diet. The consumption of fruit juices can intensify hypoglycemia and diabetes. Low calorie intake can be a problem as well for people with difficulty gaining weight or who are prone to eating disorders. The rigorous nature of a raw foods diet can trigger an obsession with eating healthy foods. For some people, a raw food diet can lead to dissociated states. A raw food diet requires a lot of preparation time, especially when diverse foods and menus are necessary to alleviate “food boredom.”

Raw diets that do not include animal proteins are deficient in B-12 and Vitamin D. Without careful planning they are low in EFAs. Nutritional supplementation is recommended if undertaking a raw foods diet. When eating raw foods like meat, dairy, and eggs, they should be organic and from a local, nonindustrial farming source to ensure cleanliness. Even organic foods grown in large commercial operations are more subject to pathogenic bacteria. Meat and fish can also be frozen for two weeks and then thawed prior to consumption.

Vegetarian Diets

While there is a wide range of vegetarian diets, from vegan to lacto-ovo-vegetarian, the foundation of a vegetarian diet excludes meat of any kind, including seafood, poultry, and red meat. One of the primary reasons people choose a vegetarian diet is generally due to the belief that it is unethical to kill animals for food. This diet is also selected for health, religious, economic, environmental, political, or personal reasons. Frances Moore Lappé's book *Diet for a Small Planet* (1971) was one of the first books to describe large-scale meat production's environmental and social impacts, and ongoing research confirms the inhumanity and toxicity of mass-produced animal foods. Lacto-ovo-vegetarians eat eggs and dairy, ovo-vegetarians eat eggs but not dairy, and lacto-vegetarians eat dairy but not eggs.

Semivegetarian diets are primarily vegetarian but may include some animal flesh, such as pescatarianism, in which seafood is the only meat consumed, or a proletarian diet, in which poultry is allowed. Macrobiotic diets include whole grains and legumes, and they may also include some seafood. Semivegetarian diets are sometimes used when transitioning into or out of a completely vegetarian diet or for other reasons such as a dislike for certain types of meat or to simply reduce meat consumption. See Box 5.9 for a satisfying vegetarian Coconut Chickpeas recipe.

Benefits

Vegetarian diets are high in fiber, vitamins, minerals, antioxidants, and carbohydrates.

Cautions/Deficiencies

Animal protein is low in a vegetarian diet, but lacto-ovo-vegetarians who consume animal by-products, such as cheese, milk, and eggs get more

protein and necessary amino acids. A vegetarian diet can provide adequate protein, but eating a wide variety of foods is essential to ensure proper nutrition. B-12 deficiency is a risk for vegetarians, as this vitamin comes only from meat or supplements. One meta-analysis showed a higher risk of depression and lower anxiety in vegetarian and vegan diets (Iguacel et al., 2021), but other research contradicts this (Jain et al., 2022). The benefits or deficits of a vegetarian diet will accrue about the diet's metabolic alignment with the individual's biology and research rarely considers this variable.

A deficiency of dietary sulfur can occur in those following a strict vegetarian or vegan diet, as they are not consuming the dietary protein that provides the sulfur-containing amino acids. A recent study shows that strict vegetarians may be susceptible to subclinical protein malnutrition that can lead to hyperhomocysteinemia and an increased risk of cardiovascular diseases (Ingenbleek & McCully, 2012). This protein deficiency also causes a concurrent sulfur deficiency, leading to problems with protein and enzyme activity in the body, as well as problems with bones, joints, metabolism, and connective tissues. Sulfur is important for the proper functioning of insulin, detoxification, carbohydrate metabolism, electron transport, and the synthesis of metabolic intermediates like glutathione.

Box 5.9

Recipe: Coconut Chickpeas

Adapted from a recipe by Melissa Clark.

Makes 4–6 servings

Ingredients

- 4 tablespoons olive oil
- 1 large onion, minced
- 1½ teaspoons sea salt
- 4 garlic cloves, finely grated or minced
- 1 tablespoon grated fresh ginger
- 2 teaspoons ground cumin
- 2 teaspoons sweet paprika
- 2 teaspoons garam masala
- 1 small cinnamon stick
- 1 (28-ounce) can whole peeled plum tomatoes

1 (15-ounce) can coconut milk

2 (15-ounce) cans chickpeas, drained

Ground cayenne (optional)

Cooked brown rice, for serving

½ cup cilantro leaves and tender stems, for serving

Directions

1. Add olive oil to a large heavy-bottomed pot or Dutch oven over medium heat. Stir in onion and ½ teaspoon salt; cook until golden and browned around the edges, stirring occasionally, about 20 minutes.
2. Stir in garlic and ginger, and cook for 1 minute. Stir in cumin, paprika, garam masala, and cinnamon stick, and cook for another 30 seconds.
3. Add tomatoes with their juices. Using a large spoon or flat spatula, break up and smash the tomatoes in the pot (or you can use a pair of kitchen shears to cut the tomatoes while they are still in the can). Stir in coconut milk and the remaining 1 teaspoon salt. Bring to a simmer, and continue to cook for 10 minutes, stirring occasionally and continuing to mash up the tomatoes if necessary to help them break down.
4. Stir in chickpeas and a pinch of cayenne. Bring the pot back up to a simmer and cook, stirring occasionally, for another 10 minutes. Serve spooned over brown rice, and topped with cilantro.

Ayurvedic Diet (Vegetarian)

Ayurveda is an ancient Indian system of medicine that is thousands of years old. The diet derived from this system is based on the principle of body types and a person’s predominant constitution, referred to as “doshas.” There are three doshas, Vata, Pitta, and Kapha, corresponding to the elements of air, fire, and water and earth.

Ayurvedic diets vary based on one’s constitution, but they are all vegetarian with an emphasis on wholesome, freshly cooked, or raw foods that are in season. Additionally, the diets incorporate a lot of spices, such as turmeric, ginger, coriander, fenugreek, and cumin. Meat may be prescribed as a medicine in cases of blood sugar issues or protein deficiency. Foods are divided into six tastes: sweet, sour, salty, bitter, pungent, and astringent, and each of these should ideally be present at every meal.

Benefits

The Ayurvedic diet aims to bring balance to specific constitutional types, so it is very personalized. It can increase energy levels, improve immunity, resolve digestive disorders, improve sleeping patterns, reduce toxicity, and improve overall health.

Cautions/Deficiencies

Using Ayurvedic dietary prescriptions and herbs could be problematic if not properly understood. Undertaking an Ayurvedic diet should be done under the care of a qualified Ayurvedic practitioner. Since this diet is mostly vegetarian, it may be deficient in Vitamin B-12, and it may be low in protein.

Five-Element Diet

The five-element diet comes from traditional Chinese medicine and is based on the five elements of water, wood, fire, earth, and metal, which correspond to the internal organs of the kidneys, liver, heart, stomach, and lungs. This diet incorporates fresh, local, plant-based foods and minimizes the use of animal proteins. The elements are also divided according to five tastes: salty, sour, bitter, sweet, and savory or pungent. Foods are chosen depending on the seasons, which correspond to the elements as well: winter is water, spring is wood, early summer is fire, late summer is earth, and fall is metal. Light cooking techniques such as steaming and poaching are emphasized.

Benefits

A Chinese medicine practitioner familiar with the constitutional needs of the client may prescribe this diet. It is especially useful when a client is in recovery from illness and digestion is weak.

Cautions/Deficiencies

It will be important to ensure adequate intake of fats and fat-soluble vitamins when on this diet.

Vegan Diet

A vegan diet is a category of vegetarian diet. It is strictly plant based without the use of any animal products or by-products. This means that vegans do not eat anything that has been derived from an animal, including meat, fish, poultry, eggs, dairy, honey, or gelatin. Vegans also believe that all sentient creatures have rights, and it is unethical to exploit animals as though they were commodities. Some people who follow a vegan diet also follow a vegan lifestyle, which eschews all clothing and personal products made from animals (leather, fur, wool, some cosmetics).

There are many reasons that people choose to adopt a vegan diet. Some approach it from an ethical standpoint and as a statement for animal rights. Vegans are against killing animals, and they also believe it is unethical to raise animals for their milk and eggs. Many vegans are also concerned about the environmental effects of pollution from factory farms, large-scale deforestation for grazing land, and the use of fossil fuels in the meat industry. People also believe that being vegan is healthier and a more natural diet for human beings, claiming that cultures consuming a primarily plant-based diet live longer and have healthier lives. However, while there is good evidence for the health benefits of a diet rich in plants, there is no evidence of any indigenous or Paleolithic culture practicing veganism, suggesting that veganism is a relatively recent innovation in dietary practices among humans.

Benefits

Vegan diets are rich in carbohydrates, omega-6 fatty acids, dietary fiber, carotenoids, folic acid, Vitamin C, Vitamin E, and magnesium.

Cautions/Deficiencies

Many people thrive as vegans. It is common for people who are not well suited to veganism (or vegetarianism) to become depressed, anxious, and fatigued due to low protein levels, as well as develop neurological and mental health problems associated with Vitamin B-12 deficiencies. Veganism is especially dangerous for pregnant women and their fetuses due to the high amounts of essential fatty acids required for brain and nervous system development, available only from grass-fed animals. Omega-3s and the fat-soluble vitamins are required especially for neurological development and the brain. A vegan diet has low cholesterol and is low in saturated fats. The major drawback of a vegan diet is that it requires care and attention to ensure that essential nutrients are being included in the diet, as it is easy to become deficient in vitamins and nutrients essential to health. Protein in a vegan diet is limited to plant proteins, found in foods like legumes, nuts, seeds, and whole grains. Vegan diets often include large amounts of soy and soy protein isolates, which can have deleterious effects on thyroid hormones and digestive enzymes. Other vitamins that are commonly missing, or very low in a vegan diet, are Vitamin D, Vitamin B-12, calcium, and iron. The fat-soluble Vitamins A, E, D, and K require saturated fats for absorption. Eating products fortified with these vitamins

and minerals, and making sure that one's diet includes complete proteins as well as varied protein sources, is essential to maintaining a healthy vegan diet. Vegans are especially susceptible to Vitamin B-12 deficiency. Vitamin B-12 is found in animal products, and while it is found in some plant foods, such as spirulina algae, tempeh, and sea vegetables, the B-12 found in these foods is an analog of B-12 that blocks the absorption of Vitamin B-12. In effect, eating these foods can cause an increase in the body's B-12 requirement. This deficiency can also cause the artery-damaging hormone homocysteine to increase. Even though the body's intestinal bacteria produce Vitamin B-12, it is not in a form that is readily used by the body (Lam et al., 2013).

Recommendations/Supplementation

People with mental illness who wish to adhere to a vegan diet should be encouraged to do so for very short periods. Because veganism is frequently linked to a robust belief system, it is essential to inquire about the meaning of veganism: Is it about animals, the environment, and/or spiritual beliefs? In my practice with vegans, I discuss whether there are ways to balance personal concerns for animal well-being with the need of the animal-human body for animal-based protein by ritually giving thanks to the animal who has given its body.

Fasting and Detoxification Diets

Fasting is the voluntary act of abstaining from food and/or liquid for a given amount of time for health-related, spiritual, or political reasons. Fasts may include the consumption of only liquids. Mono diets may be used for elimination purposes.

Water fasts eliminate all food and liquids other than water from the diet. They are generally ill-advised for mental or physical health, and people should be discouraged from water fasting. Many benefits can be obtained from juice or vegetable fasts, which include only fruit and vegetable juices and water but no other foods. Juice or vegetable fasts provide more nutrients and can be used for detoxification for 1–3 days.

Fruit and vegetable fasts restrict all foods except for fruits and vegetables, which are high in nutrients and allow digestion to rest and detoxification to occur. Mono diets are fasts in which only one food is consumed for a given period to rest the digestive system while supplying necessary nutrition, such as a rice fast or a diet of only one type of

vegetable. For example, khichadi (also khichari or khichdi) is an Indian dish made from split mung beans, rice, and sometimes other spices and vegetables; it is eaten as an Ayurvedic cleansing mono diet. This dish is easily digested and can be used after a period of intemperance or to eliminate allergens from the diet. It can also be used to transition into and out of other more extreme liquid fasts, as a recovery diet after surgery or other illnesses, or during emotional stress when digestion is taxed.

Fasts and detoxifications, like diets, follow "fad" periods. This does not necessarily mean they are without merit; it just means they are promoted at the social level, often considered the latest "cure," and attract people via social contagion. They may or may not be beneficial for individual mental health. When discussing fasts during the assessment, understanding the value of the fast and its duration, along with its effect on mental health, will be important.

Intermittent Fasting

Intermittent fasting may involve extended periods of fasting each day ranging from 12 to 18 hours. There is growing evidence of the benefits of this type of fasting for metabolic health, reducing inflammation, and benefits for epilepsy, Alzheimer's, and multiple sclerosis (Gudden et al., 2021; Reddy et al., 2024).

Benefits

Intermittent fasting has numerous benefits. Fasting 24 hours a day for 1–3 days can have positive effects, such as increasing immune health, disease prevention, mental clarity, and improving digestive health. Fasting gives the digestive system a break and allows toxins to be eliminated. The energy usually used for digestion can be used for healing and repairing damaged tissues.

Cautions/Deficiencies

Side effects of fasting include headaches, nausea, foul body odor, bad breath, and intense hunger. Nutrient deficiencies can be a problem if fasts are done for long periods of time. Other possible side effects are constipation, dizziness, fatigue, dehydration, and gallstones. Fasting is contraindicated during pregnancy and nursing and for those on medications or with diabetes, heart disease, cancer, and fevers. Starvation may be induced by strict fasting and could lead to electrolyte imbalances, renal

failure, cardiac arrhythmias, and death. People with anorexia nervosa should not fast.

Recommendations/Supplementation

It is important to transition slowly into and out of the fast. Limit fasts to 3 days. Do not use water-only fasts.

Urine Fasting

Urine fasting is drinking one's urine and water to cleanse oneself. People throughout the world practice human (and cow) urine drinking for medicinal purposes. The benefit of this fast is the nutrients and NT metabolites available in urine, which include a mixture of minerals, salts, enzymes, and hormones that cleanse the blood. Urea is also put back into the body and acts as a diuretic to cleanse the body of excess mucus.

Chapter 5: Essential Next Steps for Food Allergies and Sensitivities

Recall that food is to our bodies like fuel is to a car. Some cars can run on any fuel, but others won’t unless the mixture is right. Still, others do best on a specific octane while they might limp along on others. Once the basic requirements mentioned earlier are met, diets will differ by their ratios of foods.

- Identify the role of allergies and sensitivities in the client’s mental health.
- Conduct elimination diets and lab tests to assess for sensitivities.
- Prepare fresh food and avoid packaged foods with preservatives and additives.
- Work with the client to identify optimal diet types for their biology.
- Identify the ratio of proteins, carbohydrates, and fats that suits a specific biochemically individual metabolism: fast (carnivore), moderate (mixed foods), or slow (vegetarian-based).
- Minimize exposure to toxic heavy metals.
- Undertake periodic cleanses to detoxify.
- Identify the benefits of intermittent fasting.
- Explore the intersection of belief systems and dietary choices, differentiating between close adherence to a specific nutritional system for health and orthorexia.

6

The Kitchen Is Your Pharmacy

Diet Essential: *There is no one right diet for everyone.*

Food is medicine. What we eat is the foundation for preventing and treating mental illness. Restoring and maintaining good mental health depends on eating beneficial foods and healthy preparation methods. In Chapter 3, I explored five essential factors contributing to mental illness. In this chapter, I examine these five underlying factors common to mental illnesses and how to use principles of food as medicine to address each of these factors.

Five Essential Dietary Principles for Mental Health

1. *Support chrononutrition*. Specific foods and supplements and specific timing of food intake can be used to effect changes in circadian rhythm. For example, eating protein-rich meals early in the day supports energy and alertness, and eating carbohydrates later in the day enhances relaxation and sleep. Maintaining regular mealtimes entrains metabolic rhythm, whereas variations of regular mealtimes adversely affect fat metabolism and digestion. (See Chapter 7 for a list of nutritional supplements that help reset the circadian rhythm imbalances that underlie depression, PTSD, bipolar disorder, and insomnia.)
2. *Blood sugar handling and functional hypoglycemia*. Diets that supply moderate animal and plant protein, moderate to high amounts of fat, and lower grains help manage hypoglycemia and sugar handling in

most individuals. Animal proteins combine well with satisfying foods like steamed or baked yams, potatoes, carrots, beets, and parsnips topped with fats like olive oil, ghee, or butter. Corn tamales made with high-quality "leaf lard," a small amount of pasta or grains with red or pesto sauce, and salads with homemade dressing rich in hemp, flax, and olive oil and a pinch of sea salt all support adrenal function and stabilize blood glucose. Nuts, seeds, vegetables, and some fruits are also beneficial. The timing of food intake is important; people with unstable blood glucose benefit from eating every 3 hours. Chromium and berberine support glucose regulation, and adrenal glandular and herbal and spice adaptogens support energy and glucose handling.

3. *Decrease food allergies and sensitivities*. Chapter 5 explores ways to reduce toxins and sensitivities by eliminating "fake" synthetic-rich foods and focusing on the "original," authentic food source.
4. *Decrease inflammation and oxidative stress and enhance mitochondrial function.* Antioxidants, fruits, vegetables, chocolate, tea, and extra virgin olive oil decrease inflammation and oxidative stress. Eggs, coconut oil, and the anthocyanin-rich blue and purple fruits quench the inflammatory fires contributing to mental illness. Fresh whole foods, vegetables, fruits, and animal proteins fuel our mitochondrial engines. Nutrients that act as antioxidants to reduce inflammation and oxidative stress in the brain and improve cognition include the carotenoids found in fruits and vegetables, especially dark leafy greens, marine algae (sea vegetables, seaweed), and the red-orange spectrum (Davinelli et al., 2021). High-fat foods like avocado or avocado oil significantly increase absorption of the carotenoids, suggesting that guacamole and tomato salsa are a good combination for brain health (Unlu et al., 2005).
5. *Enhance methylation and folates*. Methylation is supported by foods rich in folate, including leafy greens, lentils, sunflower seeds, broccoli, spinach, and almonds. Liver, garlic, onions, beets, and red wine also support the methylation process, as do choline-rich foods like eggs. At least one meal a day, preferably at midday, should include protein and a big bowl of leafy green and healthy fats to fuel energy and balance mood throughout the day. The smell of certain

foods, especially citrus fruits, improves mental health, as described in Box 6.1.

Box 6.1
Breathe an Orange

More than just nutrients in foods affect our well-being. The smell of food affects our mood. The smell of a fresh orange reduces anxiety. Oranges (and other citrus) provide Vitamin C, and the white pulp provides bioflavonoids that are powerful antioxidants.

Thirteen Essential Foods for Mental Health

1. Bone broth (beef, lamb, chicken, fish)
2. Raw almonds
3. Wild salmon or other fatty fish
4. Raw butter
5. Coconut (meat and oil)
6. Sweet potatoes
7. Avocado
8. Beets
9. Cacao (chocolate)
10. Oats
11. Arugula and other bitter greens
12. Fresh sauerkraut and other fermented foods
13. Coffee/tea (green and black)

Fats and the Substitution Principle

One of the first changes I ask clients to make is to exchange the types of fats they are using. Substituting poor-quality fats for brain-healing fats is easy and one of the top three most beneficial changes people can do first (the other two are replacing refined sugar with healthier sweeteners and eliminating refined carbohydrates). No clients have ever been unhappy when I suggested they eat raw butter instead of fake butter or margarine.

Fats are medicine for the brain; consider a selection of raw, cold pressed oils, and saturated fats. Eliminate all omega-6 oils like corn oil, cottonseed, soybean, canola, and sunflower oil, as well as margarine and butter

substitutes. Replace with olive oil, raw organic butter, ghee, sesame oil, avocado oil, and coconut oil for cooking.

Food Sources of Healthy Fats

Seeds and Nuts

Raw seeds and nuts are excellent sources of fats and protein. Avoid pre-roasted nuts, which can become rancid over time. To engage children who may not initially like raw nuts, you can lightly roast raw nuts in the oven at a low temperature. Raw sunflower, sesame, and chia seeds are rich sources of omega-3 and omega-6 essential fatty acids (see Table 6.1 for Best Sources of Omega-3 Fatty Acids). Chia seeds are especially beneficial for their EFAs and contain a full complement of amino acids and a significant amount of digestible fiber. Chia should be ground before use. Nuts are digested best if they are soaked first. Soaking reduces phytic acid that binds calcium absorption in the body. Better alternatives to peanuts include hazelnut butter, almond butter, or cashew butter. Nuts can also be ground, used as a flour substitute, and made into milk. Walnuts may have beneficial effects in reducing the risk, delaying the onset, or slowing the progression of Alzheimer's disease (Chauhan & Chauhan, 2020). Nut and seed butter are excellent snacks for children at school and adults at work, especially when combined with apples or bananas.

Almonds, walnuts, and organic dried fruit can be soaked and placed in the refrigerator to make a nutritious sweet syrup to cover pancakes or cereal, instead of other sweeteners. Box 6.2 provides an energizing smoothie recipe to support mental function and satiety. Box 6.3 gives a recipe for Coconut Milk Mocha.

Box 6.2

Recipe: Chia and Nut Butter Smoothie

Makes 1 serving

Ingredients

1 large ripe banana, peeled and frozen

1 cup unsweetened coconut, almond, or hemp milk

1 tablespoon soaked chia seeds

1 tablespoon raw almond butter (can substitute cashew or hazelnut butter)

1 teaspoon coconut oil

¼ teaspoon ground cinnamon

Directions

Put all of the ingredients in a blender and blend until smooth.

Box 6.3

Recipe: Coconut Milk Mocha

Try my favorite morning or afternoon guilt-free pick-me-up. It is anti-inflammatory and rich in antioxidants and provides brain food through the 3 Cs of cognitive function: coffee, cocoa, and coconut. If you want to support focus and attention in children as they withdraw from stimulants for ADHD, you may adjust the amount of coffee to body weight for the child. You can also substitute organic decaffeinated coffee or use extra cocoa when serving to children, replacing the liquid from the coffee with additional coconut milk. Make sure your ingredients are organic and sugar-free.

Makes 1 serving

Ingredients

4 ounces fresh brewed organic coffee, hot

½ cup full-fat, unsweetened coconut milk

2 tablespoons unsweetened organic cocoa powder

2–5 drops liquid stevia, honey, or monk fruit

¼ teaspoon organic vanilla bean powder

2 tablespoons unsweetened coconut cream or full-fat cream

Directions

1. Combine all ingredients except the coconut cream in a blender at medium speed for a few minutes until frothy.
2. Pour into a mug and top with coconut cream, if desired.

TABLE 6.1
Best Sources of Omega-3 Fatty Acids

Food Type	Omega-3 Food Sources
Meat	Grass-fed beef

Food Type	Omega-3 Food Sources
Fish	Anchovies, caviar, cod, halibut, herring, mackerel, oysters, rainbow trout, salmon, sardines, scallops, shrimp, snapper, striped bass, tuna
Dairy and eggs	Milk and eggs enriched with omega-3
Legumes and beans	Edamame, miso, tofu
Nuts and seeds	Alfalfa seeds, chia seeds, flaxseeds, walnuts
Vegetables	Algae, arugula, brussels sprouts, cauliflower, collard greens, green beans, kale, romaine lettuce, spinach, summer squash, turnip greens, winter squash
Oils	Avocado, cod liver, flaxseed, fish, hemp, walnut

Sea Buckthorn

Sea buckthorn is an often overlooked plant source of omega-3, -6, -7, and -9 fatty acids. It is a rich source of omega-7 monounsaturated fatty acid (MUFA), also called palmitoleic acid. The body produces this nonessential fatty acid from glucose, which converts to fatty acids. Eat the fresh berries and seeds or add them to smoothies. Apply sea buckthorn oil internally or externally for skin, cardiovascular, and gastrointestinal health. It benefits cardiovascular health by smoothing arterial walls, reducing C-reactive protein levels, and balancing metabolic functions (Y. Chen et al., 2023). It has twice as much omega-7 as macadamia nut oil, the next richest plant source of omega-7.

Coconut

The coconut (*Coco nucifera*) is a nearly perfect food, rich in fats, protein, and a full complement of B vitamins. Coconuts provide an edible seed, water, and oil. Coconut oil is one of the healthiest and most medicinal fats and can be incorporated into daily food preparation. Over 50% of the fat in coconut oil is medium-chain triglycerides (MCTs). MCTs enter the body via the portal system without needing the lymphatic system in the intestines or bile salts for absorption. It is easily absorbed and readily available via ketone bodies as an energy source. Coconut fat produces energy, increases satiety, and may help control weight and reduce body fat. Coconut fat does not slow digestion, as most fats do, nor does it circulate in the bloodstream to the degree that other fats do.

Coconut oil is heat stable and thus an excellent cooking oil at moderate temperature. It is slow to oxidize and, therefore, resistant to rancidity. Coconut oil will raise blood lipids and may not be ideal for people trying to reduce total cholesterol or with the *APOE4* allele. The literature on its benefits (and deficits) is diverse, with most literature suggesting that coconut oil raises both LDL and HDL cholesterol. This is instructive in guiding our analysis of nutrition research, as people who benefit from a higher-fat, keto diet without the *APOE4* allele will tolerate more coconut oil with more significant benefits than those sensitive to saturated fats. When buying coconut oil, look for organic, cold-pressed, unrefined coconut oil. Lipids scientist Mary Enig recommends blending equal amounts of coconut oil, cold-pressed sesame oil, and extra virgin olive oil for daily use in cooking. This mixture should be stored in a glass jar at room temperature.

In addition to the fat, coconuts contain iron, selenium, sodium, calcium, magnesium, manganese, phosphorus, and Vitamins B-1, B-3, B-5, B-6, C, E, and K. Coconut lowers blood sugar, protects the liver, and improves immune function (DebMandal & Mandal, 2011).

MCT Oil

MCT oil is a concentrated source of medium-chain fatty acids, extracted from coconut or palm oil. The primary fatty acids in MCT oil include caprylic, capric acid, and some lauric acid. MCTs are rapidly absorbed and transported directly to the liver, where they are quickly metabolized into ketones. This provides an efficient energy source for the brain. MCT oil is used for individuals with impaired glucose metabolism, which is common in Alzheimer’s disease suggesting its benefits in preserving neuronal function and cognitive performance (Croteau et al., 2018).

Coconut Water and Coconut Meat

Coconut water has a naturally sweet flavor and is a healthy refreshing drink. It is low in calories, sodium, sugar, and fat while providing a rich source of potassium. It supplies the body with electrolytes, increasing energy, lowering blood pressure, and rebuilding lean muscle. When buying coconut water, make sure there are no added sugars.

The meat of the coconut is especially high in fiber and helps improve digestion. Dried coconut, also called desiccated coconut, is the dried and grated meat of the coconut. Use it as a topping for curries, desserts, and

yogurt, or add it to granola. Buy unsweetened dried coconut with no added preservatives.

Cod Liver Oil

Cod liver oil is rich in Vitamins A and D, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), which support healthy brain and nervous system function. The best cod liver oil is fermented and enhanced with butter oil or ghee, which adds Vitamin K-2.

Butter

Butter is an ideal source of fat and can be used daily. When possible, it is best to use raw, unsalted organic butter. Butter contains Vitamins A, D, and E, as well as lecithin, iodine, and selenium. One reason butter is so nutritious when added to vegetables is that Vitamins A, E, and K are fat-soluble and are best absorbed with fat.

Ghee

Ghee is clarified butter; it is the oil of the butter separated from the milk solids. Without milk solids, ghee is lactose-free and free of the hormones and antibiotics found in regular milk products (Gates, 2011). Casein and lactose are almost entirely removed during the clarification process. Ghee is usually tolerated well by those with lactose intolerance who cannot handle other milk products.

Box 6.4

Recipe: Deep Sleep Ghee Elixir

In Ayurvedic medicine, ghee carries the healing properties of herbs and spices deep into the body. As an easily digested fat, its addition to this bedtime drink will also transport you into dreamtime as it nourishes your neurons and sustains blood sugar throughout the night. Saffron is an antidepressant, ginger softens the belly for sleep, and cardamom soothes the senses. Madhur jaggery is an unrefined sugar rich in iron for occasional consumption.

(Serves 1)

Ingredients

1 cup (240 ml) warm oat milk

½ cup water (for steeping spices)

4 strands saffron

½ teaspoon freshly grated ginger

¼ teaspoon ground cardamom

1 teaspoon Madhur jaggery

1 teaspoon ghee

A pinch of nutmeg

Directions

1. Simmer the spices: In a small saucepan, bring ½ cup of water to a simmer.
2. Add saffron, ginger, and cardamom. Let it steep for 3–4 minutes.
3. Pour in the warm oat milk and gently heat it over low heat (do not boil).
4. Stir in the ghee and jaggery until fully dissolved.
5. Add the nutmeg. Pour and sip slowly and allow your body to relax.

Hemp Oil

Hemp oil contains a 3:1 ratio of omega-6 to omega-3 essential fatty acids, ideal for human nutrition. Purchase raw, unrefined, cold-pressed hemp oil. Hemp oil is best used on salads (not for cooking). It has a nutty flavor and mixes well with olive oil. Try making an oil blend using 75% olive and 25% hemp oil.

Lard

Lard is an excellent fat source derived from the pig that is rich in Vitamin D and saturated fat. The best quality is called “leaf lard,” usually available at the local farmer’s market or butcher. Do not use vegetable lard or commercial lard. Lard is the perfect fat to combine with coconut fat when baking or making homemade tamales. Lard has a high smoke point and can be used for gentle frying and cooking.

Preparing foods with healthy fats becomes another source of brain/mood support, as Table 6.2 shows.

TABLE 6.2
Medicinal Fats and Oils for Cooking

Type	“Good” Healthy Fats	Health Benefits
SATURATED	Butter	Ideal balance of omega-3 and omega-6 fatty acids Provides Vitamins A, D, and E; iodine; lecithin; and selenium Provides trace minerals such as chromium, copper, manganese, and zinc

Type	"Good" Healthy Fats	Health Benefits
		Supports immune function Increases metabolism Protects against pathogens in the intestinal tract Supports thyroid health Supports brain function and prostaglandin balance Assists with the absorption of fat-soluble Vitamins A, E, and K
	Poultry fat (chicken, duck, and goose)	High in Vitamin E High in omega-3 and omega-6 Supports brain function Prevents cognitive decline
	Coconut oil	Anti-inflammatory Antibacterial Antifungal Antiviral Antioxidant Lowers blood sugar Protects the liver Improves immune function
	Clarified butter (ghee)	Helps heal gastrointestinal inflammation Contains butyric acid, which has antiviral and anticancer properties Helps prevent Alzheimer's disease Promotes digestion and assimilation Provides benefits of butter without the proteins that cause allergies
	Palm and palm kernel oil	Supports healthy brain function, protecting against neurological disorders
MONOUNSATURATED	Cold-pressed extra virgin olive oil	Improves brain and nervous system function
	Avocado oil	Helps regulate blood sugar
	Cold-pressed sesame oil	Antidepressant
	Eggs	Rich in choline, an anti-inflammatory nutrient for the brain and memory Provide calcium, iron, phosphorus, and zinc; water-soluble vitamins thiamine, Vitamin B-6,

Type	"Good" Healthy Fats	Health Benefits
		folate, pantothenic acid, and Vitamin B-12; and fat-soluble Vitamins A, D, and E High in omega-3 fatty acids and lutein and zeaxanthin for better eye health Cholesterol in eggs is a precursor for production of hormones in the body, including the sex hormones testosterone and estrogen Dietary cholesterol in eggs does not raise blood cholesterol
	Lard (from pigs)	Excellent source of Vitamin D Lowers LDL cholesterol
	Tallow (from beef and lamb)	Good source of antimicrobial palmitoleic acid
POLYUNSATURATED	Walnut oil	Not to be used as cooking oil, only raw Rich in omega-3 fatty acids Reduces inflammation Supports healthy hormone levels Provides selenium, phosphorus, iron, magnesium, calcium, and zinc Antioxidant
	Cold-pressed flax oil (only use uncooked)	Good source of omega-3 fatty acids Supplies nutrient-rich lignans Supports healthy cholesterol and blood glucose levels Rich in alpha-linolenic acid (ALA)
	Pumpkin seed oil	Anti-inflammatory Provides tryptophan Increases good cholesterol Reduces blood pressure
	Grapeseed oil (high cooking temperature)	Can be heated up to 485°F, making it a good cooking oil Rich in linoleic acid Provides polyphenols (flavonoids) Provides Vitamin E Anti-inflammatory Antioxidant Antihistamine Adaptogenic (antistress)

Proteins

Meat Quality

Eating meat should be limited to humanely raised and slaughtered grass and organically fed animals. However, this is not always possible for people on limited budgets. In these cases bones and fatty cuts are also nutritious and less expensive. Confined animal feeding operations (CAFOs) are inhumane and produce lower-quality meat with depleted nutrient levels and high levels of contaminants, like antibiotics, hormones, and pesticides. These animals are also fed genetically engineered (GE) corn and soy. Grass-fed beef is superior to grain-fed beef for human health. It is higher in β-carotene, Vitamin E, thiamine, riboflavin, calcium, magnesium, potassium, and total omega-3s, and it has a healthier ratio of omega-6 to omega-3.

Organ Meats

Organ meats are an essential source of nutrients, especially for the natural carnivore and mixed metabolizer. Their source must be from grass-fed stock. Many Epicurean foods today are made from the glands and organs of animals. Liver pâtés, sweetbreads (thymus or pancreas), and dried salami are highly regarded for their contribution to health. Chicken liver pâté and prepared beef or goat lung are prized for their flavor and capacity to renew health. Eating menudo, a rich stew made from tripe or stomach, is a Sunday ritual in Mexico, and haggis, which is sheep stomach stuffed with cooked oats, blood, and organ meat, is still considered a delicacy in Scotland. Blood pudding, kidneys, goat and pork testicles, tongue, heart, pancreas, bone gels, and head cheese (meat gels) all contribute to mental health and support recovery from addictions. However, finding these traditional foods is often challenging, and their nutritional and ritual value is usually forgotten. The adrenal, liver, brain, pituitary, hypothalamus, and thymus glands play an essential role in restoring and rebuilding tissue. Despite their health benefits, it is often impossible to obtain enough fresh organic organ meats to consume them in the quantities required for medicinal purposes. As an alternative, many organs are available in high-dose, dehydrated form, which I discuss further in Chapter 7.

Box 6.5

Recipe: Bone Broth

Bone broth is a traditional recipe that is both medicinal and nourishing. Its high mineral content makes it easy to digest and it is highly nutritious, especially the gelatin obtained from the bones. The broth also supports detoxification of the liver and is anti-inflammatory (Mar-Solís et al., 2021). Use vegetable, beef, or chicken bone broth as a base in soups or sipped as is with a pinch of sea salt added for nourishment during recovery from viral and digestive and alcohol related illness. I prefer to make a broth from one type of animal or fish bones and not mix them together.

Ingredients

4 pounds raw bones from poultry, fish, shellfish, beef, or lamb

Water to cover (about 2 quarts)

¼ cup apple cider vinegar or balsamic vinegar (2 tablespoons per quart of water or per 2 pounds bones)

Vegetables (optional): celery, carrots, onions and garlic, parsley

Note: If you make bone broth for animal food, omit the garlic and onions for dogs.

Directions

1. Place bones in a slow cooker over a low heat and cover with water. Add vinegar.
2. Heat the broth slowly; once it begins to boil, reduce heat to its lowest point, so it barely simmers. Scum will rise to the surface—skim this off.
3. Simmer all day for broth made from chicken, overnight for beef broth.
4. If using vegetables, add during the last hour or until vegetables are fully cooked.
5. Strain the broth. Stock will keep several days in the refrigerator or may be frozen in plastic containers.

Cheese

Cheeses contain varying quantities of protein and fat from milk. It is mainly made from cow’s, goat’s, or sheep’s milk. It is generally high in protein, fat, calcium, zinc, phosphorus, and Vitamins A, B-12, D-3, and K-2. Aged cheeses tend to contain less lactose and are more easily tolerated by those with lactose intolerance. Cheese is high in saturated fat. The most nutritious cheese is derived from grass-fed, pasture-raised animals. Raw, unpasteurized cheese contains enzymes and healthy bacteria that improve digestion and enhance the cheese’s flavor. Organic raw cheese from grass-fed animals is the best choice because it is free of antibiotics and growth hormones and has more nutrients. Most people do well to avoid cow’s milk cheeses unless they have undergone a fermentation process that can make them more digestible. Some people experience migraines due to tyramine, which is present in aged cheeses like parmesan. Nut-based cheeses are an excellent option for a dairy-free “cheese” experience

Fish

Fish is an excellent source of protein. Only fish from wild sources should be used. Farmed fish is toxic to humans and the environment. Canned wild salmon, sardines, mackerel, and pickled herring provide nutritious, inexpensive sources of fish protein. Fish heads and fish bones make an excellent bone broth.

Plant Proteins

Hemp Protein

Hemp protein provides a complete protein, making it ideal for vegetarians and vegans since most sources of plant proteins are incomplete. It also provides the optimal ratio of omega-3 and omega-6 essential fatty acids. Hemp seeds are a healthy addition to salads, granola, and other dishes calling for nuts. They provide GLA. Hemp seeds offer Vitamins A, C, and E and β-carotene, rich in phosphorus, potassium, magnesium, sulfur, and calcium.

Pea (Legume) Protein

Pea protein powder comes from either green or yellow split peas and is a good choice for vegetarians who want to increase their protein consumption. Yellow peas are rich in amino acids, especially lysine and arginine. Pea protein is also high in iron in a nonheme form (proteins in plants are different from animal proteins), which is more easily absorbed by the body. Pea protein is also used in powdered protein mixes instead of rice due to the arsenic levels found in rice.

Whey Protein

Whey is a milk protein that is a by-product of the cheesemaking process. It is a watery liquid that separates from the curds. It is also sometimes separated from casein, the other protein found in milk. Whey is one of the best sources of high-quality protein: it contains all nine amino acids and is rich in beta-glucans and immunoglobulins. Its low lactose content makes it suitable for those who are lactose intolerant. It is widely available as a nutritional protein supplement and can be mixed into smoothies. Whey is beneficial for increasing satiety (Rigamonti et al., 2019).

Box 6.6

Recipe: Healthy Mood Salad

Every ingredient in this salad is rich and nourishing for the first and second brains. Kale nourishes the microbiome, celery is a natural sedative, beets and lemon support the gallbladder and mood, sea salt supports adrenal function, and the fats from the avocado, olive oil, and walnuts nourish the mood and cognition. Eat this salad for lunch or dinner, or use it as a raw side dish to a hearty stew.

Makes 2–3 servings

Ingredients

- 1 bunch lacinato kale
- 1 teaspoon sea salt
- 1 stalk celery, finely chopped
- 2 teaspoons lemon juice
- 1 avocado, peeled and pitted
- 2 tablespoons olive oil
- 1 teaspoon fresh minced garlic
- ½ cup shredded beets
- Raw walnuts
- Wedge of goat cheese (optional)

Directions

1. Remove stems and break up the kale leaves. Place them in a bowl and add the salt; gently massage the salt into the kale. Add celery and lemon juice and mix.
2. Mix the avocado and olive oil in a bowl with the minced garlic. Pour over the salad, mixing well. Top the salad with beets and walnuts. Serve with goat cheese.

Plant Proteins and Green Foods

Plant foods of all kinds, raw and cooked, should be used in the diet daily. Green plants are rich in chlorophyll, which is the green color of plants that helps cleanse and build blood. Chlorophyll is also called the “blood” of plants because its molecular structure is similar to hemoglobin, the molecule in red blood cells that transports oxygen through the blood. Chlorophyll inhibits bacterial growth and anaerobic yeasts and fungi in the digestive tract, purifying the body of toxins. It is anti-inflammatory, helps renew cells, and supports healthy gut microbiota. Chlorophyll also helps regulate calcium absorption. When it is a challenge to integrate fresh greens into the diet, one can use a good quality green powder rich in chlorophyll and algae. It can be added to a smoothie or to water as a drink. The importance of chlorophyll cannot be overstated for people with gut permeability and colon problems. Chlorophyll is the “deodorizer” food. It is

an energizing food important to people with fatigue-related conditions like chronic fatigue syndrome, adrenal fatigue, depression and fibromyalgia, and irritable bowel syndrome. Indeed, everyone needs chlorophyll. Chlorophyll works very well in a chocolate smoothie. Remember, while spinach, chard, and beet greens are high in chlorophyll, they are also high in oxalic acid, which inhibits calcium absorption. Varying dietary plant foods will provide a balance.

You may wish to try the delicious, mood-elevating recipes in Boxes 6.7, 6.8, and 6.9 that are also easy to prepare.

Box 6.7

Recipe: Salad Jar Meditation and Brain Bolt Dressing

People often complain about the time it takes to prepare fresh salads daily. I try to help them reframe their thoughts about time-consuming food preparation to salad making as meditation. An easy way to prepare salads that are available on demand is to make salad jars. Family members, especially kids, enjoy placing vegetables in the jars. A pint-sized or quart-sized Mason jar can be used, depending on the size of the salad you want to make. Fill the jar with all of the salad ingredients that you like. Layer the ingredients so that the dressing is at the bottom of the jar, and set the next level with heartier items that can withstand a little soaking, like carrots and other root vegetables, then fruits like tomatoes and peppers, and finally, the greens on top. Having the greens separate from the dressing keeps them from getting soggy. Anything improved by soaking in the dressing like a marinade can go on the bottom—things like chicken, fish, tempeh, beans, quinoa, and mushrooms. Be sure to pack the jar tightly so that the ingredients don't shift around. When you're ready to eat the salad, shake the jar, stir it, and enjoy!

Directions

1. Shop for vegetables from all the colors of the "brainbow" you will enjoy eating raw (see Figure 6.1). Engage the entire family. Choosing colorful vegetables you enjoy adds pleasure to making salad. Choose fresh herbs to add flavor.
2. Put on some meditation music or some fun music, if working with your family, and enter a moment-to-moment mood.
3. Wash all the vegetables and herbs and place them on the counter to dry as you cut them into bite-size pieces. Leave the skins on the vegetables, unless they are waxed or bitter. Place each type of vegetable in a bowl. Arrange them in a "buffet line," with the heavier vegetables like onions, carrots, and celery to the left. Work your way up the line so the tomatoes and then the greens like kale, parsley, and lettuce are at the end when finished.
4. Make your salad dressing (see recipe below), and chop your fresh herbs.
5. Place your jars in a line behind the vegetable bowls.
6. Add a layer of salad dressing to the bottom of each jar. Sprinkle fresh herbs on top of the dressing.

7. Add heavier items on the left to the bottom of the jar and follow along the row of bowls, adding as you go until you reach the end.

   Note: Items like nuts and seeds may be placed at the bottom to soak in the dressing or added separately when opening the jar.

Brain Bolt Dressing

One essential skill to improving mental health is making your own salad dressing. It can be simple or elaborate, but homemade dressings are medicine for the brain, while store-bought dressings are not. Nearly any freshly made dressing with quality oils will do, but this is one of my favorites. You can make a jar of it and then add some different herbs each day so it is varied for your week of salads.

Makes about 2 cups of dressing

Ingredients

1 cup extra virgin olive oil

¼ cup organic hemp oil

¼ cup flax seed oil

10 tablespoons balsamic vinegar

10 tablespoons raw apple cider vinegar

1 teaspoon sea salt

2–3 minced cloves of garlic

Freshly ground black pepper to taste

Directions

Whisk all the ingredients together; store in a glass jar. The dressing will keep for 1 week in the fridge.

Optional add-ins: 4 teaspoons Dijon mustard, ½ cayenne pepper, or 2 teaspoons curry powder and a touch of dark agave.

Box 6.8

Recipe: Baked Kale Chips

Kale chips are a nutritious and tasty alternative to potato chips and other snacks. Try this basic recipe and then experiment with different spices.

Makes 4–6 servings

Ingredients

1 bunch of kale

2 cloves garlic, minced

2 tablespoons extra virgin coconut oil, melted

Sea salt to taste

Cayenne pepper (optional)

Directions

1. Preheat the oven to 350°F.
2. Wash the kale and pat it dry. Remove the thick stems, coarsely tear the leaves, and put the leaves in a bowl.
3. Add garlic, oil, and sea salt (and cayenne pepper, if using); toss to coat. Alternatively, you can massage the oil and seasonings into the kale by hand. Spread kale out evenly on a baking sheet.
4. Bake for 10–12 minutes, or until kale is crisp at the edges, being careful not to burn it.

Sprouts

Sprouts are nutritious, inexpensive, and easy to incorporate into the diet. They provide enzymes and are high in vitamins, minerals, protein, fiber, and antioxidants. Making sprouts is easy and fun, and children enjoy it.

Try these seeds, beans, and grains for sprouting:

- *Seeds:* alfalfa, clover, broccoli, radish, fenugreek, sunflower, pumpkin, mustard, and onion seeds
- *Beans:* mung beans, lentils, and chickpeas
- *Grains:* millet, wheat, barley, brown rice, quinoa, buckwheat, rye, corn, oats, and wild rice

Alfalfa is a good source of Vitamins K and P, carotene, calcium, magnesium, potassium, sodium, iron, phosphorus, sulfur, silicon, cobalt, chlorine, zinc, and chlorophyll.

Broccoli and Cruciferous Vegetables

Glucoraphanin is a constituent of *Brassica* vegetables like Brussels sprouts, with the highest amounts found in broccoli, especially seeds and sprouts. It is converted to sulforaphane enzymatically during food preparation. It is anticarcinogenic, antioxidant, anti-inflammatory, improves insulin resistance and increases Phase 2 detoxification (Xu et al., 2018). More recently, concentrated amounts of the supplement, many times higher than found in the vegetable alone, have been explored for inclusion in the treatment of autism spectrum disorders and were found to reverse oxidative

stress and improve mitochondrial function, leading to improved behaviors (McGuinness & Kim, 2020; Singh et al., 2014). Adding significant amounts of cruciferous vegetables in the diet can help symptoms of endometriosis (García-Ibañez et al., 2020) and PCOS (Kamel et al., 2024). Several products on the market deliver a dose of about 30 mg daily. Eating too many raw cruciferous vegetables can depress thyroid function if iodine levels are low.

Seaweeds

Seaweeds are a rich source of vitamins, minerals, proteins, lipids, and amino acids. Seaweeds also contain high amounts of vitamins. They are one of the best foods to obtain minerals, including calcium, phosphorus, magnesium, iron, iodine, and sodium. They are especially rich in iodine, essential for healthy thyroid function. The high mineral content of seaweed supports nervous system function, good mental health, and muscle relaxation and function.

There are many varieties of edible seaweeds that can be eaten fresh or dried. They can also be added to salads as seasoning, wrapped in sushi and other foods, and flavored stocks, soups, grains, and beans.

Seaweeds are classified into three types: brown, green, or red. Brown seaweed and kelp have higher mineral content than red seaweed (Drum, 2013). Brown seaweeds contain alginates that are proactive against ionizing radiation and aid in heavy metal detoxification. Purchase from reputable harvesters and ensure there is no contamination with heavy metals.

Box 6.9

Recipe: Delicious Seaweed Salad

This salad uses arame sea vegetable, which is mild tasting and an excellent first step in exploring seaweed recipes. It has loads of flavor and crunch and does not disappoint. It is beneficial for fatigue, depression, and hypothyroidism.

Makes 4–6 servings

Ingredients

1 cup dry arame seaweed

3 scallions

1 cup tofu

1 carrot

½ cup pea pods

½ of a red bell pepper

½ of an English cucumber

Handful of broccoli florets

¼ cup walnuts or pine nuts

Alfalfa or clover sprouts (optional)

Dressing

¼ cup toasted sesame oil

¼ cup rice wine vinegar

1 tablespoon wheat-free tamari

Juice from 2 cloves of garlic and a chunk of fresh ginger

Dash of hot red pepper flakes (optional)

Directions

1. Soak the seaweed in warm water for 15 minutes until soft, then drain (the water is nutritious—save it for soup for you or put in your animal companion's bowl).
2. Dice the scallions, tofu, carrots, peapods, red pepper, cucumber, broccoli, nuts, and sprouts (if using) into small (equal size) pieces.
3. Mix all of the dressing ingredients together in a bowl and whisk until well combined.
4. Combine the vegetable mixture with the softened seaweed and pour the dressing over it. Mix and allow to marinate for a few hours. Eat and enjoy!

Legumes

Legumes are the edible dry fruits and seeds contained in shells and pods. They include beans, lentils, peas, and peanuts. Beans are a good protein source and rich in potassium, iron, B vitamins, and calcium. However, many people have difficulty digesting beans and develop flatulence or bloating after consuming them. Sprouting increases their digestibility and increases their Vitamin C and enzyme levels. The sprouting process breaks proteins into amino acids and starches into simple sugars. Soaking beans before cooking will reduce cooking time and begin the sprouting process, which increases their nutritional benefit and reduces their gas-producing enzymes. Cooking beans with fats and oily foods helps increase their digestibility. Adding seaweed to beans will increase their nutritional benefit, flavor, and digestibility and reduce cooking times. Seaweed, black pepper, fennel, and cumin reduce their gas-producing effects. Salt should be added only at the end of cooking. Apple cider vinegar can be added at the end of

cooking to soften the beans and increase their digestibility (to learn how to soak legumes and nuts, see Section H.5 in Appendix H).

Cooking Beans

Opening a can of beans saves time, but cooking beans from scratch is much less expensive, and you avoid the accumulation of tin in your tissues from the can. Begin by covering beans in water and soaking them overnight. Drain and rinse the water. I prefer to make my beans and bean soups in a slow cooker. That way, you do not have to worry about adding water. Add the beans to the slow cooker and cover it with two knuckles of water. Cook on high for 2 hours or until soft. Each type of legume or bean requires varying amounts of cooking time. Once the beans are ready, you may add any additional ingredients you wish to add to your recipe.

Soybeans

Soy is called an antinutrient (Gu et al., 2023) and should be avoided except in the form of fermented soy products such as miso, shoyu, and tempeh. Soy contains very high levels of phytic acid, which suppresses digestive enzymes; it also depresses thyroid function (Fallon & Enig, 1999) and is high in protease inhibitors, which suppress pancreatic enzymes. Phytic acid in soy also inhibits the assimilation of calcium, magnesium, copper, iron, and zinc. Soy also contains trypsin inhibitors that cause problems with protein digestion and may be responsible for pancreatic disorders. Understanding the negative effects of soy phytoestrogens and modulating intake during pregnancy and infancy could prevent neurological damage during critical periods of sensory development (Westmark et al., 2013). Soybeans increase the body's need for Vitamin B-12 and promote the growth of estrogen-dependent tumors. However, fermenting soybeans generally eliminates these effects, making products like miso, tempeh, tofu, and soy sauce more easily digested and beneficial for your health. Soymilk, soy protein powders, soy isolates, and soy concentrates should be absolutely avoided.

Carbohydrates

Grains

Grains are indigestible—human beings cannot digest grains. However, we can predigest them, and all traditional cultures do this by soaking the grains,

fermenting the grains, or using a sourdough culture to prepare the bread. Whole grains can be toxic if not prepared properly, as they contain phytic acid. Humans do not produce phytase, the enzyme needed to break down phytic acid. Phytic acid inhibits the absorption of calcium, copper, iron, magnesium, phosphorus, silica, and zinc, as well as some amino acids. Therefore, fermenting grains to make sourdough or to sprout them releases and neutralizes the phytic acid, making them more digestible and increasing their nutrient content. This knowledge empowers you to make informed choices about your diet.

Adding generous amounts of fat to grains protects the gut from fiber damage and increases the absorption of fat-soluble nutrients in the grains (to learn how to soak and prepare grains and to prepare a range of delicious grain recipes, see Section H.4 in Appendix H).

In Chapter 3, I discuss the contribution of wheat and its proteins, such as gluten, to mental illness (Bressan & Kramer, 2016).

Box 6.10

Oats for Sleep

Oats are an essential addition to the diet, especially for people who are anxious and have insomnia. Steel-cut oats are rich in silicon, phosphorus, and magnesium and provide a calming, nourishing effect.

Recipe: Steel-Cut Oats

I like to keep steel-cut oats cooking in a small slow cooker to eat as a sweet or savory snack any time of day. The recipe is the same as stove top, just cook on low for 8 hours. When using stovetop bring 3 cups water and 1/2 tsp of sea salt to a boil then add 1 cup of steel-cut oats. Reduce heat to a low simmer and cook for 20 minutes.

Sweet and Savory Seasoning Options

Try sweetening them with a little blackstrap molasses to add iron, copper, magnesium, potassium, and manganese or, eat them savory style with cumin, pepper, miso, or Gochujang sauce. For the perfect late-night snack, add raisins and walnuts. It helps with relaxation and sleep. For people who are not alcohol-contraindicated, half a cup (4 oz) of good-quality dark beer made with oats and hops is rich in B vitamins, acts as a mild nervine, and is anxiolytic and a muscle relaxant.

The Brainbow Colors of Vegetables and Fruits

When I talk with clients about integrating a range of foods, I rarely discuss vitamins at first. Instead, I suggest that if they choose selections from the various colors, they will obtain the necessary nutrients from food. We review Table 6.3 together and highlight the foods they like and those they would like to try but have not; we also identify the mental health benefits they want to prioritize.

Diet Essential: *Eat all the colors of the "brainbow."*

Table 6.3 lists many vegetables and fruits in the "brainbow." Figure 6.1 is a Brainbow infographic (also available on my website as a poster for you and clients to print). Hand this out to your clients to help them make healthy choices (Korn, 2023b).

TABLE 6.3
Colors of the "Brainbow"

Colors	Foods	Nutrients	Benefits
Red	Cherries Cranberries Red cabbage Beets Radicchio Tomatoes Red onions Red bell peppers Red kidney beans Pink grapefruit Red potatoes Rhubarb Red apples and pears Rainbow chard Red grapes Strawberries Raspberries Radishes Red chilies Watermelon	Lycopene (tomatoes, watermelon, pink grapefruit) Anthocyanins (strawberries, raspberries, red grapes) Antioxidants (cherries, cranberries, proanthocyanidins) Vitamin C (red bell peppers, beets, strawberries, tomatoes) Vitamin A (beets, tomatoes) Betaine (beets) Vitamin K (beets) Folate (beets) Quercetin Hesperidin	Improves memory Improves digestion Improves heart health Lowers blood pressure Anti-inflammatory
Orange	Carrots Sweet potatoes Oranges	Antioxidants (sweet potatoes)	Improves digestion Boosts immunity

Colors	Foods	Nutrients	Benefits
	Peaches Pumpkins Apricots Cantaloupe Mangoes Papaya Tangerines Butternut squash Nectarines	β-Carotene (sweet potatoes, pumpkins, carrots) Vitamin A (peaches, sweet potatoes) Folate (oranges) Vitamin C (peaches, sweet potatoes, oranges) Iron (sweet potatoes) Carotenoids Flavonoids Fiber Magnesium (oranges)	Prevents cellular damage Promotes healthy mucous membranes
Yellow	Yellow bell peppers Lemons Corn Bananas (also white) Pineapple Yellow squash (butternut, acorn, delicata) Yellow apples and pears Yellow tomatoes	α-Carotene β-Carotene Anthoxanthins Bromelain (pineapple) Carotenoids (yellow peppers) Vitamin A (yellow peppers) Vitamin C (pineapple, yellow peppers)	Improves brain function Improves digestion Boosts immunity
Green	Cucumbers Leeks Brussels sprouts Arugula Asparagus Kiwi Lettuce Green bell peppers Kale Pumpkin seeds Lima beans Spinach Chard Broccoli Peas Zucchini Green cabbage Green apples	Antioxidants (spinach) Lutein (spinach, dark leafy greens, green peppers, cucumber, peas, celery) Indoles (broccoli, cabbage) Folate (kiwi) Glutathione (kiwi) Vitamin E (kiwi) Vitamin C (kale) Calcium (broccoli) Iron (broccoli, spinach, pumpkin seeds, peas, lima beans, kale) Folate (spinach, broccoli) Vitamin A (kale) Vitamin K (spinach, kale) Chlorophyll Calcium (kale)	Detoxification Oxidative stress reduction Improves brain function and liver function

Colors	Foods	Nutrients	Benefits
Blue and purple	Blueberries Eggplant Blackberries Plums Currants Elderberries Purple grapes Purple carrots Purple cabbage Purple kale Purple potatoes	Anthocyanin (blueberries) Antioxidants (blackberries, blueberries) Fiber Flavonoids Vitamin B (plums) Vitamin E (blueberries) Vitamin C (blueberries, eggplant) Vitamin K (blackberries, plums) Calcium (eggplant) Phosphorus (eggplant)	Improves memory Improves circulation Boosts brain activity Boosts immunity Improves digestion Blood sugar regulation
White	Garlic Onions Cauliflower Potatoes Turnips Jicama Bananas (also yellow) White corn Parsnips Mushrooms Jerusalem artichokes White peaches White nectarines White radishes White beans	Antimicrobial (garlic, onions) Quercetin (onions) Manganese (cauliflower) Vitamin C (cauliflower) Protein (white beans) Iron (white beans) Potassium (white beans, bananas) Vitamin B-6 (garlic)	Reduces blood pressure Boosts immunity Cellular protection and recovery New cell growth, circulation, detoxification Lowers blood sugar
Black	Black wild rice Black beans Black lentils	Protein (black rice) Antioxidants/anthocyanins (black rice, black lentils, black beans) Copper (black rice)	Detoxification Balances cholesterol levels Prevention of Alzheimer’s, diabetes

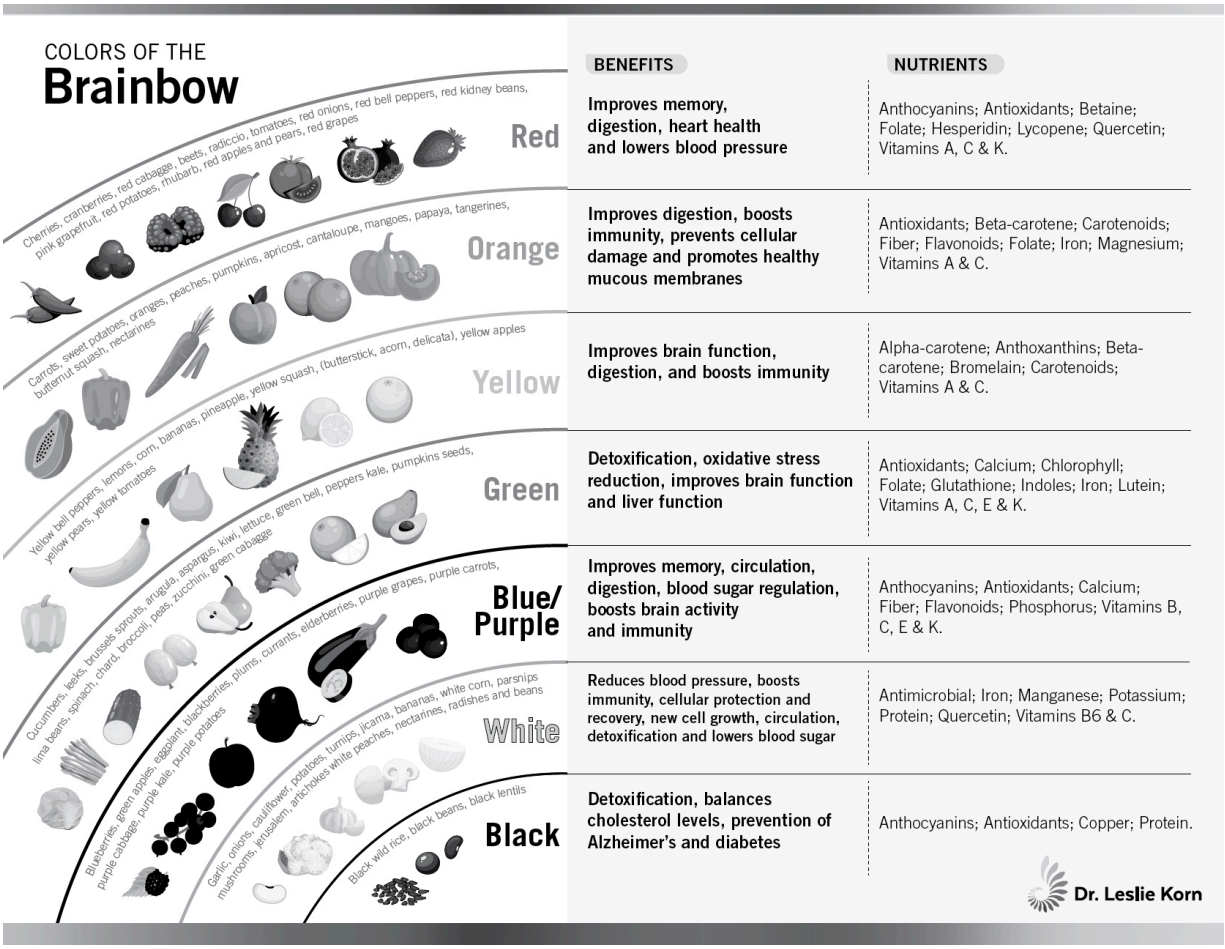
COLORS OF THE
Brainbow
BENEFITS
NUTRIENTS
Red
Cherries, cranberries, red cabbage, beets, radiccio, tomatoes, red onions, red bell peppers, red kidney beans, pink grapefruit, red potatoes, rhubarb, red apples and pears, red grapes
Improves memory, digestion, heart health and lowers blood pressure
Anthocyanins; Antioxidants; Betaine; Folate; Hesperidin; Lycopene; Quercetin; Vitamins A, C & K.
Orange
Carrots, sweet potatoes, oranges, peaches, pumpkins, apricost, cantaloupe, mangoes, papaya, tangerines, butternut squash, nectarines
Improves digestion, boosts immunity, prevents cellular damage and promotes healthy mucous membranes
Antioxidants; Beta-carotene; Carotenoids; Fiber; Flavonoids; Folate; Iron; Magnesium; Vitamins A & C.
Yellow
Yellow bell peppers, lemons, corn, bananas, pineapple, yellow squash, (butterstick, acorn, delicata), yellow apples
Improves brain function, digestion, and boosts immunity
Alpha-carotene; Anthoxanthins; Beta-carotene; Bromelain; Carotenoids; Vitamins A & C.
Green
Yellow pears, yellow tomatoes
Cucumbers, leeks, brussels sprouts, arugula, asparagus, kiwi, lettuce, green bell, peppers kale, pumpkins seeds, lima beans, spinach, chard, broccoli, peas, zucchini, green cabbage
Detoxification, oxidative stress reduction, improves brain function and liver function
Antioxidants; Calcium; Chlorophyll; Folate; Glutathione; Indoles; Iron; Lutein; Vitamins A, C, E & K.
Blue/ Purple
Blueberries, green apples, eggplant, blackberries, plums, currants, elderberries, purple grapes, purple carrots, purple cabbage, purple kale, purple potatoes
Improves memory, circulation, digestion, blood sugar regulation, boosts brain activity and immunity
Anthocyanins; Antioxidants; Calcium; Fiber; Flavonoids; Phosphorus; Vitamins B, C, E & K.
White
Garlic, onions, cauliflower, potatoes, turnips, jicama, bananas, white corn, parsnips mushrooms, jerusalem, artichokes white peaches, nectarines, radishes and beans
Reduces blood pressure, boosts immunity, cellular protection and recovery, new cell growth, circulation, detoxification and lowers blood sugar
Antimicrobial; Iron; Manganese; Potassium; Protein; Quercetin; Vitamins B6 & C.
Black
Black wild rice, black beans, black lentils
Detoxification, balances cholesterol levels, prevention of Alzheimer's and diabetes
Anthocyanins; Antioxidants; Copper; Protein.
Dr. Leslie Korn

FIGURE 6.1 Brainbow Infographic. I created this infographic to share with clients as an education tool. There are two sizes, one letter size and one poster size. Review it with clients and suggest they post it on the fridge. Go to this URL to download a full color poster: https://drlesliekorn.com/blog/brainbow-blueprint-foods/. Credit: Fatima Mora, using icons designed by Freepik, macrovector - Freepik.com, katemangostar - Freepik.com, and brgfx - Freepik.com

Follow for extended description

Special Mental Health Foods

Bee Pollen

Bee pollen comprises flower pollen, nectar, and bee saliva. It is a functional food rich in polyphenols, flavonoids, carotenoids, and Vitamins A, C, and E. It is rich in protein and potassium amino acids (Algethami et al., 2022; El Ghouizi et al., 2023). Bee pollen is pleasant tasting and easy to add to any smoothie to enhance protein.

Bitter Greens

Bitter greens are worthy of a full chapter, so basic are they to mental and physical well-being. Eat your dandelions—don't spray them! The liver and gallbladder love bitter plants and foods to aid fat digestion. Eat bitter plants like arugula, dandelion, mustard leaves, or watercress daily, especially with a high-fat meal. Bitter foods also stimulate GLP-1 in the gut aiding in satiety and weight loss.

Root Vegetables

There are so many different types of root vegetables: carrots, turnips, potatoes, celeriac, parsnips, sweet potatoes, and yucca, which are among the most popular. Root vegetables are ideal as a staple food instead of grains. In Ayurvedic nutrition, they are considered emotionally grounding foods that people with addictions, anxiety, and panic can use.

The Okinawan (Japanese) purple sweet potato is prized for its nutritional value and is considered one of the essential foods contributing to the long life of many Okinawan people. For some delicious root vegetable recipes, see Section H.6 in Appendix H.

Cherries

Cherries are a super fruit. Cherries are nutrient-dense and a potent anti-inflammatory, rich in anthocyanins and Vitamin C, increasing the availability of tryptophan. Cherries reduce uric acid levels. Drinking tart cherry juice concentrate increases melatonin (Howatson et al., 2012) and improves sleep (Pigeon et al., 2010). Try these two recipes in Boxes 6.11 and 6.12 that make use of cherries.

Box 6.11

Recipe: Cherry and Beet Gazpacho

Adapted from Dani Garcia from *The New Spanish Table*, Anya von Bremzen (New York: Workman Publishing Company, 2005)

I love all types of gazpachos. They are packed with all the colors of the brainbow, plus olive oil, so they are delicious and healthy. What could be a better combination? Plus, beets are the best food for the gallbladder and add nitric oxide to our physical, mental, and sexual energy. Cherries contain melatonin and aid sleep. This recipe is sweet and is

an easy way to support our self-care with lots of antioxidants. If you are sensitive to nightshades, omit the tomatoes and replace them with extra beets.

Makes 4–6 servings

Ingredients

- 1 beet, roasted, chopped – wrap in tin foil and roast at 425° for 1 hour until tender
- 2 pounds ripe tomatoes, seeded & chopped
- 2 cups fresh or frozen cherries
- 1 medium-sized Anaheim pepper
- 3 tablespoons chopped red onion
- 2 garlic cloves crushed
- ½ cup extra virgin olive oil
- 6 tablespoons sherry vinegar
- Salt to taste
- 1¼ cup chilled water
- 3–4 tablespoons coarsely chopped pistachios

Directions

1. Put the first 6 ingredients in a bowl, toss, and let stand for 10 minutes.
2. Blend together the ingredients until smooth (in batches if necessary), adding the olive oil as you blend. Transfer to a bowl and whisk in the vinegar. Add salt and/or more vinegar to taste. Add water to thin the gazpacho as needed. Chill for 2 hours. Top with pistachios before serving.

Box 6.12

Recipe: Cherry Broccoli Slaw

This slaw's sweet crunch and diverse tastes will win everyone over, even the fussiest in the crowd.

Makes 3–4 servings

Ingredients

- 1 medium-large head of broccoli
- 2 carrots
- 1 Granny Smith apple
- ½ cup raw or lightly toasted almonds
- Fresh mint leaves
- 1 cup dried cherries (no added sugar or sulfites)

Salad Dressing

¾ cup full-fat goat or Greek plain yogurt

¼ cup avocado mayonnaise

1 tablespoon lemon juice

Sea salt (to taste)

¼ teaspoon cayenne pepper, optional

¼ cup finely chopped shallot or red onion

1 tablespoon raw apple cider vinegar

Directions

1. Wash and trim the broccoli and cut florets away from the stems. Thinly slice the florets and cut into small bite-size pieces. Peel the stems and coarsely grate them, along with the carrots and apple. Toss together in a large bowl, then add the almonds, mint, and dried cherries.
2. Mix the yogurt, mayonnaise, lemon juice, salt, and cayenne pepper in a bowl. Add chopped shallot, red onion, and apple cider vinegar and whisk together until smooth. Pour the dressing over the slaw and toss. Cover, chill for 2 hours, and serve.

Chocolate/Cocoa

Chocolate (without sugar) is anti-inflammatory and high in polyphenols. Cocoa's beneficial effects on the gut are thought to be due to a flavanol called (-)-epicatechin, which increases circulation and blood vessel growth, improving blood flow to the brain and supporting cognitive function and memory. The polyphenols in cocoa have also been shown to improve mood (Pase et al., 2013; Shin et al., 2022). Cocoa is also a prebiotic and stimulates healthy microbiota in the gut. These microbiota then help break down the cocoa's undigested fiber into beneficial intestinal butyric, propionic, and acetic acids.

Berries

Berries (raspberries, blueberries, strawberries, and huckleberries) are among the red-blue-purple spectrum of the brainbow and are among the most versatile antioxidants. In the summer, they can be picked fresh; during the winter months, they can be stored in the freezer. Make them the fruit in smoothies or as toppings on French toast and pancakes. For a special treat, dip strawberries into stevia-sweetened melted dark chocolate. Goji berries are often in dry form; they are rich in antioxidants, amino acids, β-carotene, and Vitamins C, B-1, B-2, B-6 and E. Goji berries protect the liver and

strengthen the immune system. They help the body to burn fat. It is a nightshade, and some people may be sensitive.

Medicinal Mushrooms

Mushrooms are a type of fungi and are rich in bioactive compounds that support immune function and vitality. Lion's mane (*Hericium erinaceus*), also known as yamabushitake, supports the brain and nervous system, promoting mental clarity, memory, and focus. It supports the immune system and cognitive function. Yamabushitake effectively improves cognition in people of all ages (Docherty et al., 2023; Mori et al., 2009; Saitsu et al., 2019). Reishi (*Ganoderma lucidum*) is known as the "mushroom of immortality" and has a long history of use in Asia. It helps the body respond to stress, and it supports energy and stamina. Cordyceps (*Cordyceps sinensis*) is a parasitic fungus that enhances vitality and resilience by stimulating mitochondrial adenosine triphosphate (ATP) generation. Psilocin, which metabolizes from psilocybin in "magic" mushrooms, has been used in sacred ceremonies by indigenous peoples for millennia (Korn, 2013, 2023a) and is the subject of ongoing research for its benefits in mental health, including depression (Fang et al., 2024; Rosenblat et al., 2024), anxiety, death anxiety, obsessive-compulsive disorder, and PMDD. Functional imaging demonstrates it reduces hippocampal-default mode network connectivity, which is theorized to increase neuroplasticity and psychological flexibility (Siegel et al., 2024; Sloshower et al., 2024).

Slimy Foods

Mucus is the slimy barrier that protects the gut. A diet low in fiber, high in sugar, and food additives disrupt mucus and immunity, leading to inflammation, permeability, and allergic reactions. Okra, fenugreek, licorice root, slippery elm bark, psyllium, chia, and flax seeds are all mucilaginous and can be gently added to the diet. Plantain and nopal are mucilaginous foods, rich in fiber, nutritious, and delicious.

Plantains

Plantains are members of the banana family and are often overlooked as a food source in the United States. They offer a natural, earthy sweetness that can be seasoned as savory or sweet. They are easily digested, which makes them ideal for older people or people who are ill. They are a good potato substitute, and they have lower sugar content. Plantains make an excellent

addition to the starchy carbohydrate repertoire, especially when eliminating sugar or wheat from the diet. They can be sliced thinly, fried in coconut oil, served as chips, steamed, added to a vegetable dish, or topped with butter and cinnamon. They can be grilled and also used in a curry. My favorite way to eat them is in the soup recipe in Box 6.13, which also combines coconut and the tang of cilantro and citrus.

Box 6.13

Recipe: Plantain Soup

A plantain looks like a very big banana. They can be found in the specialty section of the produce section of your supermarket and in Mexican and Asian food stores. A plantain peels like a banana and should be ripe or moderately soft. It will satisfy the urge for a sweet root vegetable. This recipe combines coconut and cilantro (coriander greens) that enhance brain function.

Makes 4 servings

Ingredients

- 3 large plantains, peeled and cut into ½ inch slices
- Juice from ½ lemon
- 3 tablespoons unsalted butter
- 1 medium onion, chopped
- 5 cloves garlic, minced
- 4 cups freshly made chicken or vegetable broth
- Sea salt and black pepper, to taste
- 1 cup coconut milk

Topping

- ⅓ cup cilantro
- 1 clove garlic, chopped
- 1 teaspoon grated orange peel
- 3 tablespoons lime juice

Directions

1. Place plantains in a bowl; sprinkle with lemon juice to preserve their color.
2. Heat butter in a saucepan on medium heat. Add the onion and the 5 cloves of garlic and sauté until the onion is tender, about 5–10 minutes.
3. Add plantains and chicken broth and bring to a boil. Reduce heat to low, add salt and pepper, and simmer until plantains are tender, about 25–30 minutes.

4. Place mixture in a blender and puree just until smooth. Do not overblend. Return to the saucepan and add coconut milk. Cook over low heat for 5 minutes to heat through.
5. In a blender or food processor, blend cilantro, garlic, orange peel, and lime juice. After blending, swirl this mixture into the soup and serve.

Nopal Cactus

Another inexpensive food for mental health is the paddles or cladodes of the prickly pear cactus, known as the nopal. Have fun with the recipe in Box 6.14 and impress your friends and family.

Box 6.14

Recipe: Nopales and Eggs

The nopal cactus (prickly pear) can be found in good supermarkets or Mexican food stores. It is a healthy and versatile food that may be eaten raw or cooked. Rich in fiber and mucilaginous, it is beneficial for digestive distress. The nopal cactus cladode reduces blood sugar (Gouws et al., 2019), and some people buy powdered nopal and add it to smoothies. This makes it helpful in managing mood. This recipe makes a nourishing dish for any time of day. Set aside half a cup of raw nopal and use it in your smoothie the next day.

Makes 3–4 servings

Ingredients

4 paddles of nopal cactus

3 cloves garlic, minced

1 large onion, chopped

⅓ cup olive oil

¼ teaspoon baking soda

5 large eggs

1 pinch pepper, to taste

1 pinch sea salt, to taste

Directions

1. Carefully remove the spines from each nopal paddle and then julienne it into $^{1}/_{16}$-inch slices.
2. Place garlic, onions, and olive oil in a 10-inch frying pan. Cook over medium-high heat until onions are translucent.
3. Add the nopal to the onion-garlic mixture, then the baking soda, and stir the mixture frequently.
4. Whip eggs in a separate bowl.
5. When the nopal turns lighter green, stir in the whipped eggs.

6. Add pepper and salt to taste. When eggs are set, serve.

Yucca

Yucca, or tapioca or cassava, is a delicious food, whether savory or sweet. Yucca has significant anti-inflammatory and antioxidant properties (Culhuac et al., 2023). It is a perfect potato substitute. It is similar in texture to the potato and makes a good substitute in recipes. The best way to buy yucca is from an Asian market, where they sell cleaned cassava that is ready to cook in the frozen food section. Remove it from the package, boil it in water for 10–15 minutes, slice it in half, and pull or cut out the tough and stringy core until it is ready for use.

Watermelon

Use watermelon generously for depression. It is rich in Vitamin B-6. Eat watermelon fruit and seeds, which are rich in magnesium and folate. Watermelon rind contains chlorophyll and can be made into pickles. Watermelon is an excellent substitute for tomatoes in gazpacho. Sweet fruits are a good alternative to refined sugar as a transitional food. In Box 6.15, discover a delicious antianxiety tonic.

Box 6.15

Recipe: Watermelon Antianxiety Tonic

Adapted from Louisa Shafia's *The New Persian Kitchen* (Berkeley, CA: Ten Speed Press, 2013).

It might sound strange to drink apple cider vinegar, but when combined with this drink, it is delicious and refreshing, lifts the spirits, quells anxiety, and increases energy. Even children will enjoy this drink. The watermelon is rich in potassium and B vitamins and of all fruits contains the highest levels of lycopene, a powerful antioxidant. The raw apple cider vinegar is acidifying and helps relieve anxiety, depression, hyperventilation, panic, and fatigue. Make a batch and drink 1–2 cups daily for several days.

Makes 5 cups concentrate

Ingredients

- 3 cups water, plus more to serve
- ¼ teaspoon sea salt
- ¼ cup raw organic honey

10 drops liquid stevia

6 cups watermelon, coarsely chopped

1 cup tightly packed fresh spearmint

1 cup raw apple cider vinegar

Ice cubes

Garnish: Sliced watermelon, sliced unwaxed organic cucumber, and spearmint

Directions

1. Bring the water and the salt to a boil in a medium saucepan. Remove from the heat. Add the honey and stir to dissolve.
2. Combine the watermelon and mint in a large bowl. Stir in the honey-water and let cool to room temperature. Add the vinegar and stevia. Steep the mixture in the refrigerator for several hours or up to overnight.
3. Pour the mixture through a strainer. The watermelon chunks can be eaten, if desired. Pour the juice into a clean glass jar and store in the refrigerator for up to 1 week.
4. The juice is very concentrated, so to serve, pour just ¼ cup of the juice into a glass over ice and dilute it with ¾ cup water.
5. Garnish with the watermelon, cucumber, and mint.

Why Not Sugar?

Sugar refined from sugar cane and sugar beets depletes B vitamins and immune support minerals, such as zinc, and reduces the body's capacity to digest and absorb glucose. Refined sugar is also highly inflammatory; it exacerbates pain and raises triglycerides and cholesterol levels. Its use is a significant cause of the worldwide epidemic of type 2 diabetes. Fibers and mucilaginous foods, such as edible cacti and slippery elm bark, slow the absorption of sugars in the intestines. Foods high in water-soluble fiber, like flaxseed, pectin (from apples), guar gum, and seaweeds, are also highly beneficial in amounts from 80 to 100 grams daily. Research shows that psyllium husk improves glycemic and fat control and reduces cholesterol.

In Box 6.16, learn how to stop the addiction to sugar in 7–10 days.

Box 6.16
How to Stop the Sugar Addiction

Eating a protein-rich diet for 7–10 days can help clients withdraw from sugar and refined carbohydrates. Eat small amounts (2–4 ounces) of protein six times a day (about every 3–4 hours) and one to two servings of a root vegetable, such as a sweet potato or carrots,

topped with butter, coconut oil, or olive oil, along with raw salads or cooked green vegetables. There is no need to be hungry, so you may eat as often as you need.

Following this change in diet, most people will lose their craving for refined carbohydrates and sugars. From there, you may add small amounts of additional carbohydrates like fruit and grains daily. One of the best ways to engage children and adults alike in giving up candy is to make candy that is healthy and medicinal for mood. Children love making the treats in Box 6.17. Make a double batch and freeze the extra treats.

Box 6.17

Recipe: Healthy Chocolate-Almond-Coconut Treats

Recipe by Rudolph Ryser

This recipe is medicine. It is a delicious and healthy alternative to commercial candy bars. Making these treats can be a group activity and is especially fun for children and adolescents, who can learn about healthy "treats" and the effects of sugar on focus and well-being. The anti-inflammatory properties of both the coconut and dark chocolate make this treat a healthy and effective mood booster.

Makes about 30 pieces

Ingredients

- ½ cup blue agave, raw honey, or maple syrup or 20–25 drops of liquid stevia
- 2 tablespoons butter
- 2 cups unsweetened shredded coconut, lightly packed
- 17 ounces organic dark chocolate (no sugar added), chopped or broken into small pieces
- 30–35 lightly roasted and unsalted almonds

Directions

1. Bring the agave to a low boil over medium heat in a saucepan. Add the butter and melt it, stirring occasionally. Once fully integrated, remove from heat and let sit for 2–3 minutes. Add the coconut slowly, stirring until it is fully coated.
2. Put a sheet of parchment paper on a clean cutting board. Pour the agave-coconut mixture onto the parchment, spreading it with a spatula or the flat side of a knife.
3. Spread the mixture to about ½ inch thick. Form into a rectangle, roughly 9 by 4 inches, and cover with another piece of parchment. Using a rolling pin or bottle, lightly roll the mixture outward until it is about ¼ inch thick.
4. Allow the mixture to cool slightly. Remove the top parchment, then cut it into strips about 1 inch wide. Working crosswise, cut the strips again into 2-inch rectangles. Slide the coconut squares, still on their parchment, onto a half-sheet pan, allowing them to set while preparing the chocolate. Put the pan in the refrigerator. (*Tip:* Coat the knife with butter to keep the mixture from sticking.)

5. Place the chopped chocolate in a heat-proof bowl. Set the bowl over a pan of simmering water, but don't allow it to touch the water. Melt the chocolate, stirring constantly with a rubber spatula until smooth. Remove the melted chocolate from the heat.
6. Place the second piece of parchment paper on the cutting board. Working quickly while the chocolate is still warm, spread a thin layer of the chocolate into a rectangle about the size of the sheet of coconut squares, using only half of the melted chocolate.
7. Remove coconut squares from the refrigerator and immediately turn them out onto the sheet of melted chocolate. Press down firmly using your hands. Remove the parchment from the coconut. Using a knife, separate the coconut squares following the cuts made earlier.
8. Top each coconut square with a roasted almond. Using a spoon, ladle the rest of the melted chocolate across the coconut squares, creating an even layer. Refrigerate the pan for 20–30 minutes to allow the chocolate to harden. Recut the squares and refrigerate until ready to serve.

Sugar Substitutes

Monk fruit, stevia, or syrup from soaking dried fruit in water provides sweet alternatives to cane sugar. Raw honey, molasses, and maple syrup are suitable substitutes for refined sugar in the early stages of sugar withdrawal. Avoid the sugar alcohols like xylitol and erythritol. Stevia is a hundred times sweeter than sugar and has been shown to reduce blood sugar (Arumugam et al., 2020). While the powdered form of stevia can tend to leave a bitter aftertaste, the liquid form does not. Either form can be used in drinks or food preparation.

Cooking With Spices and Herbs

Herbs and spices are sources of nutrients, medicine, and culinary pleasure for the brain and mind. Some, like basil and oregano, are best used when fresh; others, like cardamom and cinnamon, will only be available in dry form. Freeze fresh herbs by chopping them up, or, if you can get a lot of fresh basil during the summer, make pesto and freeze it for the winter months. Always plan your meals for the week that will use up the herb you want to buy so that it does not go to waste.

Dried herbs should be stored in tightly sealed containers in a cool, dry place. You can get creative by making your own spice mixes and substituting one herb for another in recipes.

Ginger, Saffron, and Turmeric

Three cooking herbs and spices, ginger, saffron, and turmeric, merit further discussion because they are powerful antioxidants and antidepressants.

Ginger as a rhizome is the best form to use. It is a powerful digestive aid and reduces intestinal gas. Ginger aids with protein digestion and reduces problems associated with uric acid. It soothes the gastrointestinal tract and is beneficial for gastrointestinal disorders. Ginger has anti-inflammatory and antioxidant effects, relieving pain and spasms, nausea, and menstrual cramps.

Saffron (*crocus*) is native to Iran and grows throughout the Mediterranean. The familiar little bright yellow threads are the stigma of the crocus flower. While not commonly used in American or European cooking, it is worthwhile to have in the kitchen for unique dishes. A few threads can be added to rice as it is cooking. It is an effective anxiolytic and antidepressant (Jackson et al., 2021) at a level of 30 mg/day, which equals about 15 threads.

Turmeric is a rhizome related to ginger. It is sold in powdered form and as a fresh root in Asian food markets and some grocery stores with an extensive selection of roots. Use both forms in cooking and to make golden milk or tea. Combine with ginger root for additional anti-inflammatory benefits. It is also available in capsules and as a liquid extract. The active ingredient curcumin is a potent anti-inflammatory, and this “root” can be added to food or used as a supplement.

Turmeric root protects the brain and may serve as a preventative for Alzheimer’s disease, by reducing amyloid plaque (Chainoglou & Hadjipavlou-Litina, 2020), and Parkinson’s disease (Patel et al., 2022). Turmeric reduces headache pain and supports liver, gallbladder, and digestive health by stimulating bile flow. Try adding turmeric to curries, stir-fries, and sauces. Turmeric and its anti-inflammatory chemical curcumin require black pepper or piperine, a constituent of black pepper responsible for its pungency, to be absorbed (bioavailable) by the body. Whether cooking with turmeric or taking it as a supplement, black pepper should be one of the ingredients to achieve absorption. Black pepper must not be consumed more than one teaspoon daily when certain medications like digoxin or phenytoin are used. Make sure your brand contains black pepper extract or piperine when shopping for turmeric supplements.

People at risk of kidney stones or other oxalate-related conditions should avoid large amounts of turmeric. When taking turmeric, use it with

food and probiotics to reduce oxalate levels. Use it for 4 weeks, and then alternate with another natural anti-inflammatory. Pregnant women should not use it without a doctor's approval. Extended use can cause stomach upset or heartburn. A pinch added to any dish will impart a bright yellow color. Box 6.18 combines turmeric in a healthy anti-inflammatory drink for any time of the day. In Box 6.19, a hot drink with turmeric makes a good morning drink or afternoon pick-me-up.

Box 6.18

Recipe: Inflammation-Fighting Golden Turmeric Smoothie

Makes 1 serving

Ingredients

- 3–4 ice cubes
- 1 cup unsweetened, plain coconut milk (or almond, hemp, rice milk)
- ½ teaspoon organic turmeric powder
- 1 teaspoon organic extra virgin, cold-pressed coconut oil
- Generous dash of vanilla extract
- Maple syrup, coconut sugar, raw honey, or stevia to taste
- Dash of freshly ground black pepper
- Dash of cinnamon, nutmeg, ground cloves, or cardamom (optional)

Directions

1. Put the ice in a blender and add the coconut milk, turmeric, coconut oil, vanilla, sweetener of choice, and black pepper.
2. Blend on high for 10–20 seconds until smooth.
3. Pour into a tall cup, sprinkle with your favorite spices, and enjoy!

Box 6.19

Recipe: Turmeric-Rooibos Brain Chai (Caffeine-Free)

Recipe by Marlene Bremner

Makes 4 servings

Ingredients

5 cups water

2-inch piece of fresh ginger, coarsely chopped

2-inch piece of fresh turmeric, coarsely chopped

1 tablespoon cardamom pods

1 teaspoon cloves

½ teaspoon black peppercorns

1 cinnamon stick

1–2 tablespoons Rooibos (red bush) tea, to taste

1 cup milk (coconut, almond, or rice, etc.)

1 teaspoon vanilla extract

1 teaspoon extra virgin coconut oil

Sweetener of choice (honey, stevia, or agave)

Directions

1. Place the water, ginger, and turmeric in a medium-sized pot and bring to a boil. Reduce heat to medium and simmer for 5 minutes. Add the cardamom pods, cloves, black peppercorns, and cinnamon, and simmer for another 15 minutes.
2. Strain the liquid into a large bowl, reserving the spices and roots for another chai batch. Add the Rooibos tea to the bowl and cover, steeping for 5–10 minutes.
3. Strain the tea back into the pot. Add the milk, vanilla, and coconut oil and gently heat over medium-low heat for 5 minutes, stirring to combine. Serve in individual cups and sweeten to taste using honey, stevia, or agave nectar.

Sea Salt

Sea salt is an essential culinary medicine for the adrenal glands and thyroid. Replace table salt with unrefined sea salt, which contains 80 minerals that support adrenal function and other needs of the body. These include iron, magnesium, potassium, calcium, manganese, zinc, and iodine. While there is less iodine in sea salt than in iodized table salt, it is preferable to rely on sea salt while ensuring that there are other sources of dietary iodine, such as dried seaweed. Most people will benefit from supplemental kelp tablets and a diet rich in scallops, cod, shrimp, prunes, eggs, and turkey. Vegetarians and vegans especially are at significant risk for iodine deficiency and should supplement with iodine, as are people with hypothyroidism. Deficiency in iodine causes thyroid problems and learning disabilities. Iodine levels are also influenced negatively by bromide intake in commercial baked goods and pesticides and fluoride in fluoridated water and toothpaste. Look for the gray sea salt in a larger crystal form or granules, Celtic sea salt, or Himalayan pink salt. These high-quality salts

also provide chloride, which helps the body produce hydrochloric acid and improve digestion. Celtic sea salt helps mineralize and hydrate the body while restoring the sodium-potassium balance. In addition to salt, many types of seaweed can be used in soups or with beans.

Shichimi Togarashi (Seven Spice Blend)

This spicy seasoning mix is made with Szechuan pepper, red chilies, black sesame seeds, white sesame seeds, seaweed, ginger, and roasted orange peel. Its seven ingredients have given rise to the name *Shichimi*, which means “seven flavors” in Japanese.

Table 6.4 lists the mental health benefits of herbs and spices.

TABLE 6.4
Mental Health Benefits of Herbs and Spices

Name	Form	Use	Benefits
Basil	Fresh, dried, or capsules	Mediterranean and Italian dishes, pasta, sauces, dressings, and pesto	Antioxidant Protects against free radical damage, reduces inflammation Good source of magnesium, Vitamin K, and manganese Holy basil, known as Tulsi, is anti-inflammatory, antioxidant, and adaptogenic
Black pepper	Whole or ground	Slightly spicy seasoning for all kinds of foods	Increases hydrochloric acid production in the stomach and improves digestion Required for absorption of curcumin (turmeric)
Cardamom	Ground, seeds, or pods	Tea and coffee, curry, grain dishes, meat dishes, winter squash (See the recipe for Inflammation-Fighting Golden Turmeric Smoothie in Box 6.18)	Analgesic Good source of calcium, sulfur, and phosphorus Improves digestion and relieves gastrointestinal problems Tea reduces stress and depression

Name	Form	Use	Benefits
Cayenne pepper	Fresh, dried, and ground	Many dishes from around the world, hot sauces, marinades, or used topically	High in Vitamins A, B-6, C, E, as well as riboflavin, potassium, and manganese Promotes healthy liver function and aids digestion Helpful in migraines, heartburn, and allergies Pain reduction (topical)
Cinnamon	Cinnamon sticks or powder, or as an extract	Breads, meats, soups, hot and cold cereal, drinks, and sweets (See the recipe for Energizing Turmeric Smoothie in Section H.2 in Appendix H)	Aids digestion and stimulates appetite Rich in manganese and antioxidants *Candida* treatment Increases glucose uptake Lowers serum glucose in diabetic patients
Cumin	Seeds and ground	Soups, stews, curries, meat dishes, and pickles (See the recipe for Khichadi in Section H.4 in Appendix H)	Aids digestion and stimulates appetite
Dill	Fresh and dried	Russian, European, Italian, Greek, and African foods; fish, salad dressings, borscht, soups, potatoes, and pickles (See recipe for Creamy Dill Dressing in Section H.8 in Appendix H)	Antioxidant Relieves gas Provides Vitamin A Antibacterial
Garlic	Fresh, dried, crushed, and capsules	Stir-fries, pastas, marinades, vegetables, meats, dressings, sauces (See the recipe for Onion-Garlic Soup in Section H.6 in Appendix H)	Improves immunity, lowers blood sugar, and reduces cholesterol and triglyceride levels Antidepressant and anti-inflammatory
Ginger	Tea, fresh or dried, powdered, and liquid extracts	Stir-fries, Asian food, marinades, desserts (See the recipe for Turmeric-Rooibos Brain	Anti-inflammatory and pain relief Relieves gastrointestinal disorders

Name	Form	Use	Benefits
		Chai in Box 6.19)	Boosts immune system Relieves nausea
Oregano	Dried or fresh	Mediterranean and Italian food; savory and/or spicy dishes; marinades, roasted vegetables, casseroles, pasta sauces, and pizza (See the recipe for Papaya Barbecue Sauce in Box 5.4 in Chapter 5)	Rich in Vitamin K Antioxidant Relieves gastrointestinal problems and headaches
Rosemary	Fresh or dried	Mediterranean and Italian cuisine; roasted meats, stuffing, roasted vegetables, soups, stews, marinades, and sauces	Provides Vitamin A Anti-inflammatory Aids digestion, relieves gas and headaches, and improves concentration Calming
Tarragon	Fresh and dried	French cuisine; salad dressings, fish, and with eggs (See the recipe for Honeyed Carrots in Section H.6 in Appendix H)	Antioxidant Rich in Vitamins A and C, and B vitamins Provides calcium, manganese, iron, copper, magnesium, potassium, and zinc Stimulates appetite and aids in anorexia Relieves insomnia
Turmeric	Tea, fresh or powdered form, and liquid extracts	Indian food; curry, stir-fries, sauces (See the recipe for Turmeric-Rooibos Brain Chai in Box 6.19)	Antioxidant Anti-inflammatory and adaptogenic Relieves pain and depression Improves liver and gallbladder

Fermented Foods

Fermented foods benefit almost everyone, but especially people with anxiety and psychotic disorders, as fermented foods enhance GABA and minerals in the gut. Like bone broths, fermented foods are inexpensive yet can be essential brain nutrition. Fermented foods can be used with or instead of supplemental probiotics and are ideal where one's budget will not

allow purchases of probiotic supplements. Fermenting food “predigests” the nutrients so they are more easily digested. They are rich in enzymes, lactobacilli, and vitamins. Every culture ferments some kind of food, so the role of fermentation as medicine is well understood. People with SIBO, GERD, or histamine and yeast intolerance will benefit from healing their gut before benefiting from many fermented foods.

Start by eating cultured vegetables. Include *raw, unpasteurized* sauerkraut, kimchi (see below), and other pickles, not to be confused with the pasteurized sauerkraut and pickles sold on grocery store shelves, which are devoid of live cultures and enzymes. Be sure to avoid pasteurized fermented foods, which may claim to have live cultures. Below I describe some fermented foods, and recipes for many of these may be found in Section H.7 in Appendix H.

Fermented Vegetables

Kimchi

Kimchi is a fermented vegetable dish that usually includes Chinese (or Napa) cabbage, chili peppers, garlic, radish, green onions, ginger, and salt. Kimchi recipes are similar to sauerkraut but usually call for soaking the cabbage and vegetables in a salty brine, then rinsing the brine off before fermenting it. They also include garlic, ginger, onions, and chili peppers.

Curtido

Curtido can be fermented or pickled and is a Mexican and Honduran specialty that includes carrots, cabbage, cauliflower, and jalapeno chilies combined with vinegar and olive oil. It is a good starter side dish.

Box 6.20

Recipe: Homemade Sauerkraut

Adapted from Gabriel Cousens, MD, and the Tree of Life Cafe Chefs, *Rainbow Green Live-Food Cuisine* (Berkeley, CA: North Atlantic Books, 2003).

One of the ways I interest skeptical people in fermented foods (and healthier eating in general) is by the substitution method. Many people like sauerkraut and pickles, but most use bottled products that have no health value. I ask my clients who like their hot dogs just to find some organic all-beef hotdogs, top them with real sauerkraut and homemade pickles, and voila, they now have a healthy recipe. Slowly, people will try this approach

with other foods as well. Sauerkraut and other fermented vegetables are an excellent source of Vitamin U (S-methylmethionine), which helps heal ulcers.

Ingredients

- 4 cups green cabbage, shredded (reserve 3–5 whole cabbage leaves)
- 2 cups Napa cabbage, shredded
- 2 tablespoons ginger, grated
- 1 tablespoon white miso
- 2 teaspoons whole caraway seeds

Directions

1. Mix all ingredients.
2. Spoon the mixture into a slow cooker or gallon-size glass container. Pound the mixture with a wooden spoon to release the juices and remove all air. If necessary, add water to cover the cabbage if there isn't enough juice to do so.
3. Roll up the reserved cabbage leaves and lay them down across the top of the vegetables.
4. Set a plate on top of the cabbage leaves and weigh it down with suitable-sized rocks (or other objects).
5. Leave sauerkraut in a warm (60–70°F) place for five days. Do not uncover during this period.
6. After five days, remove the covering and scrape away the top layer of vegetables. (Do not be concerned if you see mold; remove the top layer, and the rest will be good to eat.) Sauerkraut will become acidic as it ferments, but it takes on a sweeter smell and flavor when it is ready to eat.

Fermented Dairy

Yogurt and kefir are cultured dairy products containing beneficial microbiota that help restore balance to the intestinal microbiota. Probiotics contain both beneficial yeasts and bacteria. Kefir is similar to yogurt, but it is more of a liquid and has a tangy flavor. Kefir is a natural tranquilizer with a rich supply of tryptophan, calcium, and magnesium, and it is rich in B vitamins, including B-6, B-12, biotin, and thiamine. Eat only full-fat yogurt without additives and artificial sweeteners. It is easy to make yogurt at home as well. Making yogurt and kefir is a great family event and learning process for children (for recipes to make yogurt and kefir, see Section H.7 in Appendix H).

Kombucha

Kombucha originated in China and later spread to Russia and Europe. It is a fermented tea that is effervescent and sour to the taste. It is made using black or green tea that is sweetened with sugar. Then bacteria and yeast are

added to ferment it. The tea is left to ferment for at least a week as the microbes feed on the sugar and multiply into a mushroom-like disk that floats on top of the tea, called a symbiotic colony of bacteria and yeast (SCOBY). The microorganisms in the SCOBY convert sugar into vinegar. Kombucha is very beneficial for the health of the microbiome. Do not add additional sugar to the drink.

Fermented Soy: Miso, Natto, and Tamari

Miso

Miso is a probiotic food made from fermented soybeans or grains. It is a smooth paste made from cooked soybeans, salt, a fermenting agent (*Aspergillus oryzae*), and water. It adds beneficial microbiota to the diet, a high dose of protein, several B-complex vitamins, and calcium, zinc, iron, copper, and magnesium. White miso is the mildest, making a delicious marinade and salad dressing (see Box 6.21).

Box 6.21

Recipe: Miso Salad Dressing

Miso can be made from soybeans or other grains like barley and rice. If you are new to miso, start with the mild-tasting white miso. When using miso, use just a tablespoon or two to achieve a health effect. If you heat it, make sure that it's gently warmed; otherwise, it destroys all the beneficial bacteria. It is an ideal food for recovery from illness.

Makes about ⅓ cup of dressing

Ingredients

- 1 tablespoon unseasoned rice vinegar
- 1–2 tablespoons white miso
- 2 teaspoons grated peeled fresh ginger
- 1 garlic clove, minced
- ½ teaspoon honey or ten drops of liquid stevia (optional)
- Pinch of ground black pepper
- 3 tablespoons sesame or olive oil
- Dried red chili pepper flakes, to taste (optional)

Directions

Combine all ingredients; whisk and pour over greens.

Natto

Natto is a Japanese food made from soybeans fermented with *Bacillus subtilis*. It has a very strong flavor and smell and is an acquired taste. It can be added to miso soup (see recipe for Miso Soup With Natto in Section H.7 in Appendix H) or used in small amounts on toast. Natto has been shown in some trials to degrade dementia-associated amyloid (Hsu et al., 2009).

Tamari

Tamari is a Japanese soy sauce generally made with no wheat and traditionally made from miso paste. It is preferable to soy sauce because most commercial soy sauce has wheat and additives. Due to the negative health effects of soybeans, it is important to use fermented tamari.

Vinegar

Vinegar has numerous uses, topically and internally. Always use raw, organic, unfiltered, and unpasteurized vinegar that has been naturally brewed. Distilled vinegar lacks the natural enzymes, minerals, and nutrients. Any clear vinegar with no “mother” (the strand-like substance in the bottom of the bottle) has no nutritional value and demineralizes the body. Natural, raw vinegar should be pungent, with a rich, brownish color and a visible mother. The best choices are apple cider, white wine, rice wine, and umeboshi vinegar. Mix a teaspoon of apple cider vinegar with water and sip throughout the day to boost energy. Apple cider vinegar is especially good for vegetarians with anxiety and depression. A cup can also be added to the bathtub during a long soak to decrease fatigue. Umeboshi vinegar is made from the brine of umeboshi (pickled ume plums and beefsteak leaf). It has a tangy, salty flavor and can be used for dressings, marinades, soups, greens, pickles, and vegetables. Umeboshi vinegar has plenty of salt, so it is unnecessary to add more when using it in recipes.

Juicing

Juicing vegetables and fruits is a delicious way to intensify their nutritional benefits. Juicing should be used as culinary medicine, not as a beverage. Fresh juices are vitamin-rich yet lack fiber and should be balanced with whole fruits and vegetables. Juices are an easy way to incorporate chlorophyll-rich vegetables into the diet, and children will also benefit. As a general rule, fruits should be juiced separately from vegetables. Since many fruits are high in fructose, people with sugar-handling problems such as

prediabetes or diabetes should be careful about the number of fruits they juice in one setting.

Juice cleanses include drinking 1–2 quarts of fresh vegetable juice for one to three days. Specific vegetables or fruits improve health and treat specific conditions. Fasting or cleanses should be done under the supervision of a healthcare provider. Carrots, beets, greens, and other vegetables can be used in small quantities daily rather than for fasting cleanses and provide much of the same benefit. When juicing greens, avoid too many raw cruciferous vegetables. Start with the ideal juice combination in Box 6.22.

Box 6.22

Recipe: Carrot Jubilee

Makes 2 servings

Ingredients

1 pound organic carrots

1 organic beet

1 organic apple

Small piece of fresh ginger

Optional: 1 teaspoon coconut oil

Directions

Wash and cut all the vegetables and fruits to pass through the juicer. Keep the skin intact. Strain the juice lightly, keeping some of the pulp.

Green Juices

Green juice is more nutritious than fruit juice, which is high in calories and sugar. Most juice should come from greens such as celery, lettuce, cucumber, parsley, cilantro, and other green vegetables. To adjust to the flavor of green juices, try starting with milder vegetables like carrots, cucumbers, and celery and slowly work up to cabbage, spinach, and lettuce. Bitter greens, like kale, dandelion, and mustard greens, can be added in

small amounts. Add orange, lemon, and lime juice to soften bitter flavors. Other flavor enhancers include cranberries and fresh ginger.

Tips

- Use organic vegetables.
- Use carrots or lemon to improve the flavor of your green juices.
- Always drink juices right after making them to get the most benefit.

Special Topic: Alcohol and Drug Recovery

People in recovery from alcohol and drug use disorder always have poor digestion. At the start, they will benefit from the help of caregivers who prepare foods and ensure they eat and take their nutrients. Small meals of simple foods, emphasizing liquids like bone broths, are ideal. A diet protocol should include plenty of plant and animal protein, fats, carbohydrates like root vegetables, and the use of some sea salt with each meal. Bitter greens, such as dandelions and arugula, are especially beneficial for the liver.

Alcohol and stimulant drugs like meth and cocaine contribute to glucose dysregulation and sugar cravings that need to be managed during recovery. Effective management helps prevent relapse. Increasing easily digested proteins, fats, honey, and fruit-sweetened juices or smoothies helps ease the way. Alcohol and drugs deplete B vitamins, which help regulate blood glucose, reinforcing the need for high-dose B vitamins. Add raw honey, chromium, chia seed, and other supplements to fruit smoothies to satisfy sugar cravings. Combine this approach with the protocols in Chapter 7 for optimal nourishment. Eat smaller meals more frequently (5–6 times a day). Eating the protein first stimulates gastric acid production.

Staying well hydrated between meals is essential to support proper digestive secretions.

Include fermented foods and foods rich in probiotics and prebiotics, such as oats, bananas, garlic, asparagus, and leeks—these will feed healthy gut microflora and improve digestion.

The proteolytic enzymes bromelain and papain, derived from pineapple and papaya, will aid digestion. Beetroot, broccoli, and spinach are high in betaine. Betaine increases the synthesis of S-adenosyl-L-methionine

(SAM), which is required for liver detoxification. It also protects against alcohol-related fatty liver, or if already present phosphatidylcholine is used. Increase choline-rich foods, like eggs and foods with zinc, such as cashews, ginger, sunflower, and pumpkin seeds. Healthy sea salts like Himalayan pink salt will support adrenal function and provide the body with chloride.

Sample Food Schedule

- Early morning: protein/carbohydrate/fat
- Midmorning: protein snack/smoothie with whey, greens, berries, fat
- Before lunch: fresh carrot/apple/beet juice
- Lunch: protein/fat/vegetables, root potatoes or grains (nutrients)
- Midafternoon: protein/carbohydrate snack or cocoa
- Dinner: protein/carbohydrate (nutrients)
- Before bed: carbohydrates and a little protein

Water

Water should be filtered if it contains impurities. Chlorine in drinking water causes Vitamin E deficiency when consumed over the long term and kills beneficial microbiota in the gut. There are different kinds of water purifiers. Activated charcoal filters remove toxins and wastes that are not water soluble, though they will not remove toxins like nitrates, nitrites, and sodium fluoride. Reverse-osmosis purifiers remove nearly all toxins, minerals, and gasses, producing purified water. Chemicals in plastic can seep out of plastic water bottles when left sitting out for a long time or if exposed to heat or sunlight. Even if they are BPA-free, the other chemicals in the plastic are dangerous and could disrupt endocrine function.

Coffee

> ***Diet Essential:*** *Coffee is a drug, not a beverage, so use it wisely.*

Coffee (and caffeine) enhances mood, stimulates alertness, and improves mental and physical performance. However, too much also increases anxiety and insomnia. Research suggests coffee may exacerbate PMS, with

higher caffeine intake linked to more severe symptoms (Weinberg & Bealer, 2002). In contrast, other research is contradictory (Purdue-Smithe et al., 2016). Some women report improvement with less caffeine use, so it is likely a genetic response to metabolizing coffee.

Our genetics influence how we metabolize coffee, particularly the CYP1A2 gene, which encodes an enzyme in caffeine metabolism. People with two copies of the A allele (AA genotype) of the rs762551 SNP in CYP1A2 are considered "fast metabolizers" of caffeine. This means you break down caffeine more quickly and are less likely to experience adverse effects, such as increased risk of hypertension or heart issues, compared to those with the AC or CC genotypes ("slow metabolizers"). This SNP also affects the metabolism rates of some drugs. You might already sense how you metabolize coffee, but to confirm your genetics, conduct a genomic test using 3x4 (see 3x4 Genetics in the Assessments, Testing, and Lab Tests Section of the Resources).

Acids in coffee can destroy the villi in the small intestine, causing malabsorption and nutrient deficiencies of essential minerals like calcium. However, research also suggests that higher coffee consumption reduces cognitive decline risk by lowering brain amyloid accumulation (Gardener et al., 2021). People with GERD do best without coffee or by making cold-brewed coffee, which reduces the acids significantly (see Appendix L for coffee withdrawal protocols; see Box 6.23 for how to make cold-brewed coffee).

Box 6.23

Recipe: Cold-Brewed Coffee

A cold-brewing method can reduce the acidity of coffee by about 70%. It can be used for hot or iced coffee.

1. Start with coarsely ground, organic coffee. If you are grinding your beans at the store, use the French press setting.
2. Combine grounds with water in a glass container. Use ⅓ cup of grounds with 1½ cups of water at room temperature. Stir well.
3. Cover the container and let steep in a cool, dark place for 12–16 hours.
4. Strain the mixture using a coffee filter. This is a concentrated coffee extract, so it should be mixed with water:
   - To make iced coffee, mix equal parts coffee extract with cold water and add ice.

- To make hot coffee, use equal parts coffee extract (at room temperature) and boiling water.

5. These ratios can be adjusted depending on how strong you like your coffee.
6. Use the coffee concentrate within 1–2 weeks.

Coffee Substitutes

There are many coffee substitutes made from various roasted grains and seeds. A coffee substitute called *capomo*, also known as *ramon*, is made from the breadnut *Brosmium alicastrum*, indigenous to both coasts of Mexico. *Café de capomo* is rich in B vitamins, calcium, Vitamin C, and trace minerals; it is so rich in amino acids and folate that it lifts the mood and stimulates breast milk in nursing mothers. Table L.2 in Appendix L lists coffee substitutes, their ingredients, and their caffeine content. (And watch my documentary on capomo at https://www.cwis.org/searching-for-capomo/.)

Green Tea

Green tea (*Camellia sinensis*) is a traditional beverage in Asian societies known for its calming effects. Green tea contains the anxiolytic amino acid L-theanine that balances the effects of caffeine (Yokogoshi et al., 1998). Dietary theanine supplementation increases a state of alert relaxation. Theanine stimulates GABA and serotonin production and is a relaxing anti-inflammatory beverage (Musial et al., 2020). Green tea has at least two functional constituents (epigallocatechin gallate [EGCG] and theanine) beneficial for cognitive health, memory (Schmidt et al., 2014), and the prevention of Alzheimer's disease (Hyung et al., 2013). Add a teaspoon of green tea powder to a smoothie daily to support cognitive function.

Matcha is a powdered green tea that can be whisked with hot water to make a thick, foamy drink. It is a traditional drink in Japanese tea ceremonies. Matcha is made from the entire young tea leaf ground into a smooth powder. It is the only type of tea that uses the whole leaf, leading to high levels of chlorophyll and caffeine, Vitamin C, iron, potassium, and fiber. This delicious powder can also be mixed with steamed or heated milk to make a matcha green tea latte, an invigorating alternative to coffee.

Cooked Food or Raw?

Some foods are best eaten cooked, while others are rich in nutrients when eaten raw or lightly cooked. Raw foods are an ideal way to increase your nutrient intake. Because heating food can decrease the amounts of nutrients and enzymes present, raw foods will often provide more nutritional value to your diet and aid digestion. Generally, about 50% of the diet should be eaten raw or slightly cooked. However, raw food is more challenging to digest, so when people change their diets, they can begin by adding small amounts of lightly steamed or raw vegetables and fruits to adjust over time. There are many ways to enjoy raw foods, ranging from a simple salad to an apple to sprouting nuts and seeds. One small study (Koebnick et al., 2005) suggests strict adherence to a raw plant diet only leads to lower overall cholesterol but higher homocysteine levels due to low levels of B-12.

Chapter 6: Essential Next Steps for Using Your Kitchen as Your Pharmacy

- Explore the diverse foods of the “brainbow.”
- Try herbs and spices for new flavors, sensory awareness, and their moodboosting qualities.
- Test for the effects of gluten and casein with a lab or via elimination.
- Eat only high-quality, virgin, cold-pressed oils and fats.
- Eliminate refined carbohydrates like white flour and sugars.
- Use proteins and root vegetables to stabilize mood and blood sugar.
- Include diverse fermented foods in daily meals.
- Identify new foods to try for their mental health benefits.
- Increase the amount of raw foods in the diet if currently under 25% of daily intake.
- Emphasize organic, farm-raised, hormone-free, and antibiotic-free animal products.
- Identify the benefits of functional foods, including broths and juices for alcohol and drug use recovery.
- Try new foods and recipes and share these discoveries with family and friends.

7

Best Supplements for Mental Health

Vitamins, Minerals, Amino Acids, Glandulars, and Special Nutrients

Diet Essential: *Diet is essential but not sufficient.*

A healthy diet is essential for mental health; however, it is not sufficient to treat mental illness. Vitamins, minerals, amino acids, special nutrients, and glandulars are also necessary. Foods and supplements alter our brain, mind, and body biochemistry. The effective use of these resources depends upon an individualized approach. These supplements are essential to restoring mental wellness and reducing or eliminating psychotropic medications. Every initial assessment with the client should include a comprehensive list of what nutrients or supplements they are taking.

While individual needs are always arising from biochemical individuality, each person has basic nutritional needs. In my practice, adults and children have consistently responded positively to combining a variety of supplements for mental health, and these combinations have shown positive results in children with a bipolar diagnosis (Firth et al., 2019; Loughman et al., 2021).

Can I get all the vitamins and minerals I need from eating food? is a question my clients frequently ask. There is no simple answer to that question. I am convinced that, to prevent or treat mental illness, the most beneficial approach is to combine various psychotherapies and daily exercise

with vitamins, minerals, and nutrients in addition to a selection of healthy, whole foods. With the commercially produced food supply in the United States, the standard American or SAD diet is deficient in vitamins and minerals and contributes to mood disorders. Climate change is affecting the soil and decreasing nutrients, even in wild plants in rural regions of the world.

The following pages contain nutrient combinations designed to treat specific conditions, along with dosing recommendations and protocols.

Before Beginning Supplementation

Before beginning nutritional supplementation, ensure clients can digest and assimilate additional concentrations of nutrients. Chronically ill people have poor gut function and inflammation that prevents effective digestion. With these individuals, I often begin by using glutamine and curcumin (5–10 g/d) to soothe the small intestine and prepare for improved absorption. Use this for a minimum of 30–60 days. One might also treat GERD with slippery elm bark, chlorophyll, Vitamin U (S-methylmethionine), and/or deglycyrrhizinated licorice (DGL). Once the sensitive mucosa are soothed, they can take up nutrients more efficiently. People who require supplementation and need several months to restore their digestion should receive IV vitamin therapy.

Nutritional Supplementation and the Five Essential Factors

In the previous chapters, I have explored the five essential nutritionally related factors underlying mental illness and discussed the role of these factors in assessment, as well as the use of food and special diets in their treatment: chrononutrition; blood sugar handling and hypoglycemia; inflammation, oxidative stress, and mitochondrial function; food allergies and sensitivities to gluten and casein; and methylation pathway/folate conversion to L-methylfolate. In this chapter, I continue the review of these five essential factors in the context of nutritional supplementation.

Chrononutrition

Lithium orotate, melatonin, phosphatidylserine, and Vitamin B-12 (methylcobalamin) are essential supplements for regulating circadian rhythm. Combine them with bright light exposure in the morning and use blue-light-blocking glasses at night.

Signs of Chrononutrition Imbalance

- Insomnia
- Depression, especially early-morning waking depression
- Bipolar disorder or labile mood
- Premenstrual syndrome
- Bulimia
- Dementia
- Fibromyalgia

Blood Sugar Handling and Hypoglycemia

The three essential nutrients to support blood sugar levels are B vitamins, chromium, fiber, and adrenal support using adaptogens like licorice root, ashwagandha, and glandulars.

Signs of Functional Hypoglycemia

- Mood lability
- Irritability
- Shakiness or feeling “rubbery” or about to faint between meals
- Angry
- Inability to concentrate or focus
- Anxious
- Sleepy after meals (insulin surge)

Inflammation, Oxidative Stress, and Mitochondrial Function

Reducing inflammation and oxidative stress and enhancing energy metabolism in the brain are essential to mental health recovery (Tolkien et al., 2019). I have identified healthy anti-inflammatory foods, vitamins, minerals, and unique compounds that are potent antioxidants. Let’s review why these are important to mental and physical well-being. Recall the image

of a car rusting due to its exposure to the elements. This oxidation process is similar to what occurs in our bodies, caused by free radicals.

Free radicals are naturally occurring molecules created through oxidation in the body. These atoms, or groups of atoms, have an odd number of electrons that steal electrons from other molecules, stabilizing them but creating a new free radical. This newly created free radical must steal from another molecule to become stable, and the process continues in a domino effect, causing damage and destruction to the body's cells.

While the oxidative process is necessary for us to obtain energy from our food, if free radicals are excessively produced, they are very destructive. Hence, the body has a system of protection through antioxidants, which neutralize free radicals. When oxidation occurs in excess, free radicals are produced in amounts too large for the antioxidants to neutralize them effectively. This leads to oxidative stress. This in turn increases cell destruction and leaves the body vulnerable to mental illness.

A combination of antioxidant foods, such as berries, and compounds, including proteolytic enzymes, Vitamin E, lipoic acid, CoQ10, and pyrroloquinoline quinone (PQQ), is protective against the oxidative process and can reduce inflammation as an underlying factor in mental illness. Kramer and Bressan (2018) caution against the excessive intake of supplemental antioxidants, emphasizing that low levels of free radicals play a beneficial role, particularly in supporting immune function and memory consolidation. They advocate for stress-reducing activities and a diet rich in quality, nutrient-dense foods to naturally stimulate mitochondrial antioxidant production, promoting a balanced and effective approach to antioxidant support. These clinical decisions, for example, asking how much and what type of antioxidant supplementation my client requires, constitute the art of applying the science of nutrition to each client's particular needs. As a rule, one should always cycle on and off supplements every month for 3–5 days. One can also take certain supplements for 3 months and then cycle off those and add in others.

Signs of Inflammation, Oxidative Stress, and Mitochondrial Function

All mental health distress has underlying biological processes, especially these:

- Depression

- Autism spectrum disorders
- Schizophrenia disorders
- Fibromyalgia
- Chronic fatigue
- Dementia

Food Allergies and Sensitivities

In Chapter 5, I reviewed the three essential principles of food allergies and sensitivities: (1) identifying the culprit through elimination diets or specific salivary or serum antibody testing, (2) eliminating the exposure, and (3) enhancing digestive function by reducing gut permeability and using digestive enzymes and psychobiotics.

People can also have allergic reactions to vitamins, such as a skin rash in response to Vitamin D-3, though these reactions are rare. Most often, reactions result from the fillers in supplements. People sensitive or allergic to foods may also be reactive to certain ingredients in nutritional supplements. For these individuals, testing one supplement at a time, for 3–7 days, and noting any reaction is essential. Then, supplements may be added one at a time using the same process.

Fillers are inactive substances like lactose, cornstarch, and preservatives. The best quality supplements limit or eliminate these substances. The poorest quality supplements also include dyes and coloring agents, which can trigger reactions. Read the ingredients labels. Some companies advertise as hypoallergenic, meaning they use no fillers or additives that could cause a reaction. Others guarantee that they are gluten-free. The Resources section at the back of the book lists a few of these highest-quality companies.

Methylation Pathway: Folate Conversion to Methylfolate

The goal of nutritional supplements includes enhancing and balancing methylation. This often occurs by increasing doses of Vitamins B-6 (pyridoxal 5' phosphate) and B-12, L-methylfolate, and CoQ10 to support the methylation pathway. Dietary recommendations are provided in Chapter 6.

- Treat the individual (age, size, and particular needs), not the disease or symptom.
- Spread the desired effects of supplements across the four broad areas: vitamins, minerals, amino acids, and glandulars.
- Tailor the protocol to client needs and plan for incremental change.
- Start out at lower doses and increase slowly.
- Children's doses are adjusted according to body weight.
- First, provide the core foundation: broad-spectrum vitamins, minerals, and amino acids, then add additional, higher doses of specific nutrients as needed.
- Identify the best delivery system for the client based on assessment.
- Use only high-quality, natural form supplements: look for the food sources of the vitamins on the label or 100% natural.
- All vitamins and minerals have cofactors; make sure you use supplements with these cofactors.
- Read labels: lower quality vitamins have additives, fillers, and often food coloring.
- Search for a few supplements that combine a variety of vitamins, minerals, and amino acids that will provide most of what you need.

Method of Supplement Ingestion

Most supplements will be taken orally in capsules, pills, liquids, or powders. Powders containing combinations of nutrients may be ideal for mixing water, smoothies, or food, especially for children, older people, or people who prefer not to take pills. Some pills can be ground in a spice or coffee grinder and added to applesauce, or capsules may be opened. For example, the mineral magnesium may be absorbed via a lotion or soaking (see Box 7.1), thus reducing the amount of oral magnesium supplementation required. Many vitamins and nutrients are also available in liquid liposomal form to enhance absorption and bypass the destructive effects of gastric juices.

Box 7.1
Epsom Salt Bath

Epsom salt (magnesium sulfate) baths are a simple way to absorb magnesium, relax muscles, reduce anxiety, and prepare for sleep. There is controversy about whether and how

much topical magnesium can be absorbed transdermally (Chandrasekaran et al., 2016). There is certainly no harm (and only good) in this bath, a ritual dating back to soaking in the Dead Sea. Add 1 cup of Epsom salts (magnesium sulfate) to a warm/hot bath and soak for 20 minutes. Complete bathing 1 hour before bed. Use a foot soak if there is no bathing facility.

Myer's Cocktail Intravenous Nutrient Support

When people are very fatigued, ill, or unable to mobilize to undertake a nutritional program in the early stages of recovery, obtaining the (modified) "Myer's cocktail" by working with a functional medicine physician or nurse can be helpful. This IV cocktail contains magnesium, calcium, and Vitamins B-12, B-6, and C. People describe a pleasant feeling as the magnesium flows through the body, bringing waves of warming relaxation. It is effective against migraines, fatigue (including chronic fatigue syndrome), fibromyalgia, and acute muscle spasms (Gaby, 2002; Wells et al., 2020). Receiving this IV mixture is an effective start to any recovery program to boost immunity, strength, and vitality.

Box 7.2 describes a smoothie that has all the ingredients necessary to lift your mood and help children focus (additional smoothie recipes may be found in Section H.2 in Appendix H).

Box 7.2

Recipe: Daily Protein and Supplement Smoothie

Smoothies provide an easy way to ingest nutrients and oils as an alternative to pills and capsules. Capsules can be opened, and pills can be ground with a mortar and pestle or in a small electric grinder—experiment with ratios and quantities, as well as fruits and base liquids.

For a simple meal or when digestion is impaired, add whey powder for an easily digested source of protein; however, ensure it does not have sugar or additives.

Makes 1 serving

Ingredients

- 4 ounces plain yogurt (goat), or almond milk, hemp milk, or raw milk
- 4 ounces water or unsweetened fruit juice
- 2 teaspoons (heaping) of liquid fish, flax, and/or borage oil (2,000 mg omega-3 fatty acids)
- ¼ frozen banana (peel bananas and place in freezer in advance)
- ¼ cup frozen raspberries, blueberries, mangos, or fruit of choice

Matcha green tea powder (½ tsp)

Powdered nutrients

Powdered whey protein (optional)

3–10 drops liquid stevia, monk fruit, or honey

Directions

Put the ingredients in a blender. Add enough water and ice to make either a thin drink or a thick frozen shake.

Tips for Organizing Nutritional Supplements

How people organize and take their nutrients reflects how they manage their lives. People with focus and attention challenges will organize and adhere to a regimen differently than some who are more obsessive about order. Adjust your recommendations to the individual, as you will find various patterns. Our work is not only identifying what our clients will benefit from but how we can coach them for success.

- It is easy to organize pills for 3–4 weeks at a time.
- Place the nutrient bottles in a row.
- In front of the bottles, place the same number of paper cupcake cups as bottles in a row.
- Make as many rows as there are times of day. For example, make three rows of cups if you take nutrients three times a day. Now, you have three rows of cupcake cups: one row for breakfast, one row for lunch, and one for dinner, each 10 cups long.
- Open one bottle at a time and put one capsule/pill into each cup until each cup is full for the time of day the capsule is needed.
- Go through each bottle until you have completed all of them. You now have cups filled with nutrients for 10 days. Repeat this process until you have filled enough cups for 3–4 weeks.
- Obtain small bags and begin to fill a bag one cup at a time and put elastics around one each of your breakfast, lunch, and dinner bags so you end up with 30 packs of bags that will be ready each day.
- If you will be at the office or on the road, place an extra bag where you might need it.
- Keep them cool, dry, and out of the sun.

Essential Vitamins for Mental Health

Vitamins are either *water-soluble* or *fat-soluble*. Water-soluble vitamins dissolve in water and are not stored in the body. The risk of overdosing is extremely low. In contrast, fat-soluble vitamins require sufficient dietary fats to be absorbed and utilized. They are stored in body tissues and thus can be overdosed more easily, though this is rare.

Vitamins work synergistically. In this section, I review vitamins essential to mental health. The text highlights essential information about each vitamin, and Table 7.1 provides a useful list of the essential vitamins for mental well-being, their food sources, and dose ranges.

TABLE 7.1
Vitamins for Mental Well-Being

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
A (β-carotene)	Sweet potatoes, carrots, (raw) dark leafy greens, apricots, butternut squash, red peppers, eggs, peas, parsley, beef liver	Boosts immunity	Increases oxidative stress	Up to 7,500 mcg (25,000 IU) o.d.
B-1 (thiamine)	Beans, blackstrap molasses, bran, brewer's yeast, enriched cereals, enriched rice, fish, lentils, nuts, organ meats, pork, rice, wheat	Alzheimer's prevention Regulates the nervous system Assists with energy metabolism Reduces stress Boosts immunity	Increases pro-inflammatory cytokines, confusion and disorientation, blood-brain barrier dysfunction, and Wernicke's encephalopathy resulting from alcohol overuse	4.5–40 mg o.d.

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
	germ, whole grains			
B-2 (riboflavin)	Almonds, asparagus, beet greens, meat, dairy products, eggs, fish, leafy greens, liver, legumes, mushrooms (cremini), nuts, spinach, tempeh, turkey, yogurt, cheese, kidneys, yeast	Helps memory loss, Alzheimer's	Depression	2–6 mg o.d.
B-3 (niacinamide)	Tuna, chicken, turkey, salmon, beef kidney, beef liver, beets, brewer's yeast, dairy products, eggs, asparagus, tomatoes, avocado, sardines, sunflower seeds	Depression, fatigue, alcohol recovery Reduces risk of Alzheimer's disease		Anxiety and fatigue: 500 mg o.d. Schizophrenia: 1,000–4,500 mg o.d. Depression: 500 mg t.i.d. Alcohol recovery: 1,500 mg t.i.d.—uppermost range 6,000 mg t.i.d. For flushing niacin, use doses at 500 mg b.i.d. for lowering cholesterol

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
B-5 (pantothenic acid)	Avocado, broccoli, cauliflower, cereal grains, chicken, eggs, legumes, lentils, meat, milk, mushrooms (shiitake and cremini), sweet potato, turkey, vegetables, yogurt	Supports neurotransmitters Protects against mental stress, anxiety Reduces depression Balances blood sugar Aids sleep Lowers LDL cholesterol	Fatigue, insomnia, low mood	500 mg o.d.[a] 300 mg b.i.d. to lower LDL cholesterol
B-6 (pyridoxal 5'-phosphate)	Avocados, bananas, beef, black beans, blackstrap molasses, brown rice, cantaloupe, chicken, cod, collard greens, flax seeds, garlic, pistachio nuts, pork, prunes, red bell peppers, salmon, snapper, spinach, strawberries, sunflower seeds, tuna, turkey, turnip greens	Relieves depression Essential for neurotransmitter synthesis		50–100 mg o.d.

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
B-7 (biotin; also called Vitamin H)	Almonds, avocado, bananas, berries, Swiss chard, eggs, meat, nuts, nut butters, organ meats (esp. liver), sardines, seafood	Supports adrenal function Synthesizes fatty acids and amino acids Supports nerve health and hair and nail growth		500–2,000 mcg o.d.
B-8 (inositol)	Artichokes, cantaloupe, citrus fruits, eggplant, green beans (fresh), okra	Supports neurological function Improves and balances mood, especially bipolar disorder, OCD		5–20 g o.d. OCD: 4 g[b]
B-9 (folate)	Asparagus, avocado, beans, beef liver, beets, brewer's yeast, brussels sprouts, bulgur wheat, grains, leafy greens, orange juice, root vegetables, salmon, spinach, turnips, whole grains, white beans	Supports proper nervous system functioning Reduces homocysteine levels in the blood Supports normal prenatal neural development	Mood disorders, depression, bipolar disorder	Major depression: 15 mg L-methyl folate, combined with methyl B-12 and niacin Note: Do not use folic acid supplements—use L-methyl folate
B-12 (methyl cobalamin)	Animal proteins like red meat, beef liver,	Relieves depression Aids cognitive function	Deficiency leads to cognitive decline,	1,000–2,000 mcg o.d. (oral)

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
	cod, dairy products (esp. yogurt), eggs, fish, salmon, sardines, shellfish (clams, shrimp, scallops), tuna		Alzheimer's, brain atrophy	
Choline	Egg yolk, liver, organ meats, nuts, cream, bananas, barley, butter, brussels sprouts, cauliflower, chicken, cod, collard greens, corn, flax seeds, ginseng root, grass-fed beef, lentils, milk, oats, oranges, peanuts, potatoes, salmon, scallops, sesame seeds, shrimp, tomatoes, tuna, whole-wheat bread	Supports acetylcholine in brain Improves brain metabolism, energy Improves memory and attention span Reduces chronic inflammation		Citicoline: 500–700 mg t.i.d.; doses for CDP choline range from 500 to 2,000 mg o.d. Alpha GPC choline: 300–700 mg t.i.d.
C	Bell peppers, broccoli, brussels	Protects against oxidative stress Boosts immunity	Depression, schizophrenia	Acute stress periods:

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
	sprouts, cantaloupe, cauliflower, citrus fruits, kiwi fruit, oranges, papaya, pineapple, potatoes, strawberries, tomatoes	Promotes synthesis of serotonin, norepinephrine		2,000–20,000 mg[c] Doses above 20 g/d should be administered IV Up to 50 g is administered for long COVID, EBV, chronic illness
D	Oily fish, eggs, sardines, salmon, tuna	Reduces depression, pain Boosts immune function		Depression: 1,250 mcg (50,000 IU) o.d.[d] Chronic pain: 100 mcg (4,000 IU) o.d.[e] To prevent deficiency: 25–100 mcg (1,000–4,000 IU) o.d.
E	Almonds, asparagus, avocado, beet greens, mustard greens, peanuts, spinach, sunflower seeds, Swiss chard, turnip greens, wheat germ	Improves vascular flow Anti-inflammatory	Increased brain inflammation, depression, poor circulation	Define whether using tocopherols or tocotrienols or both 400–800 IU complex E tocopherols and tocotrienols o.d. 100–600 mg tocotrienols
K-1 and K-2	Broccoli, brussels sprouts,	Anti-inflammatory Protects against cognitive decline		2,000–8,000 mcg o.d.[f]

Vitamin	Richest Dietary Sources	Mental Health Benefits	Symptoms of Deficits	Dose Ranges
	cauliflower, dairy, eggs, fermented soy, green tea, leafy greens, liver, meat	Slows Alzheimer's progression		
"U" (methylmethionine)	Alfalfa, asparagus, beets, cabbage juice (raw), carrots, celery, green tea, onions, parsley, peppers, potato juice (raw), sauerkraut, spinach, tomatoes, turnips	Prevents/relieves GERD Reduces allergies		10–20 mg t.i.d.-q.i.d.[g]

[a]Usually part of a B-complex or part of "stamina" compounds.

[b]In three divided doses daily.

[c]Every 2–3 hours up to 20,000 mg/d or until diarrhea occurs.

[d]Oral, once per week for 8 weeks.

[e]For 5 to 9 months.

[f]Total: 1,000/K-1 and 1,000/K-2.

[g]For 4–6 weeks at a time. For ulcers, stomach inflammation, and GERD: combine with Vitamin A and chlorophyll.

Contraindications and Side Effects for Vitamins

When developing a nutritional protocol, it is essential to review the client's medication list and their illnesses since specific vitamins, minerals, amino acids, and glandulars may be contraindicated. In cases where clients are taking medications or have co-occurring medical problems, it is helpful to coordinate with another health professional and to analyze the list of drugs in a drug-nutrient-herb interaction database (see the Resources section at the

back of the book). Generally speaking, all the nutrients identified next have a good record for efficacy and safety. For example, while it is expected to be told to stop fish oil before surgery due to the blood thinning effect, it takes consistent use of 3–4 g fish oil daily to have even a mild effect. However, just as we would evaluate whether a client is a candidate for exposure therapy, EMDR, or CBT, so we assess the particulars of each client's requirements, incorporating safety as a criterion.

Here I list some of the significant cautions or contraindications to consider (though it is not exhaustive). Among the things to consider are that some nutrients may do the following:

- Slow or increase the metabolism/excretion of certain medications.
- Potentiate or synergize the action of certain medications.
- Exacerbate existing health conditions or be contraindicated for those conditions.

Some nutrients may be mildly stimulating, and others may be mildly sedating; indeed, these are often effects we hope for with our clients. This knowledge should inform the time of day nutrients are delivered. Except for amino acids, take vitamins and nutrients about halfway through a meal. Proteolytic enzymes have two applications: with food, they serve as digestive aids; on an empty stomach, these enzymes digest inflammatory proteins like fibrin, kinins, and immune complexes.

Water-Soluble Vitamins

B-Complex Vitamins

A B-complex vitamin supplement is the place to start with vitamin supplementation. Everyone benefits from a B-complex vitamin with comprehensive minerals to manage hypoglycemia or hyperglycemia. It is ideal for people of all ages with mood, attention, and focus disorders and alcohol and drug recovery. Roger Williams, the biochemist who named folic acid, identified pantothenic acid and was the originator of the concept of biochemical individuality. He asserted alcoholism was a disease primarily caused by Vitamin B deficiency and could be treated with B-complex vitamins and minerals. B-complex vitamins support relaxation, cognition, and neurological health and are cofactors in the synthesis and function of neurotransmitters. When choosing a B-complex vitamin, opt for L-methylfolate instead of folic acid.

The following vitamins are in B-complex supplements and may be supplemented individually at higher levels.

Vitamin B-1 (Thiamine)

Thiamine deficiency occurs as a result of alcohol abuse and can lead to irreversible brain damage, including Wernicke's disease and Korsakoff's psychosis. Adding thiamine to the diet of those who use too much alcohol or are in recovery is essential. Thiamine will benefit people who have had gastric bypass and who have low blood pressure, which leads to complaints of fatigue and just "not feeling well." Benfotiamine (S-benzoylthiamine-O-monophosphate) is a fat-soluble Vitamin B-1 (thiamine) derivative that may be absorbed better than thiamine.

Contraindications: Excess B vitamins are excreted in the urine, making it bright yellow. If you are taking chemotherapy medications, consult with your health professional before using B vitamins.

Vitamin B-2 (Riboflavin and Riboflavin 5'Phosphate)

Vitamin B-2 is required for the synthesis of folates and Vitamin B-6. Older people, the chronically ill or who overuse alcohol, and women who are pregnant or on birth control will benefit from supplementation.

Contraindications: Riboflavin is considered very safe.

Vitamin B-3 (Niacin, Niacinamide)

Niacin (nicotinic acid) and niacinamide (nicotinamide) are two primary forms of Vitamin B-3. They have slightly different functions. Niacin and niacinamide are beneficial for depression, anxiety, and recovery from alcohol addiction. Most people prefer niacinamide because niacin causes (unpleasant) flushing; however, where increased blood flow is beneficial, niacin flushing may help in vascular conditions. Niacin (not niacinamide) is also effective in reducing LDL cholesterol and is one alternative to statins. Niacinamide stimulates the GABA receptors and can be used for mood stabilization and as a sedative. Niacinamide should be a staple for the treatment of anxiety, depression, insomnia, dementia, and alcohol withdrawal (Prousky, 2014). The psychiatrist Abram Hoffer (1962) used large doses of niacin and niacinamide for the treatment of schizophrenia. He found that at least four weeks was required to achieve an effect and that treatment reduced the number of days of hospitalization. Lake (2006) suggests adding 15 grams of L-methylfolate (or 500 mg thiamine t.i.d.) to 3–8 g niacinamide to improve outcomes alongside conventional antipsychotics.

Vitamin B-5 (Pantothenic Acid) and Pantethine

Pantothenic acid is essential in synthesizing neurotransmitters, especially acetylcholine and essential fatty acids, and supports adrenal and digestive function. Pantethine is the bioactive form of pantothenic acid and more readily converts into coenzyme A in the body. Pantethine is dosed at 300 mg b.i.d. to lower LDL cholesterol.

Vitamin B-6 (Pyridoxal 5'-Phosphate)

Vitamin B-6 is necessary to metabolize proteins and essential fatty acids and convert amino acids into dopamine and norepinephrine. Supplementation using pyridoxal 5'-phosphate (P5P) is the preferred form. P5P, the active coenzyme form of Vitamin B-6, is crucial in converting tryptophan into serotonin, a key neurotransmitter for mental health. People with liver dysfunction do not readily convert B-6 efficiently, making P5P supplementation particularly important.

Symptoms of Vitamin B-6 deficiency include fatigue, light sensitivity, and joint pain. Vitamin B-6 deficiency contributes to insomnia, hypertension, PMS, and irritability. Add 50–100 mg Vitamin B-6 for the treatment of depression and anxiety. People taking SSRIs might consider adding Vitamin B-6 to their protocol.

Contraindications: If taking antiseizure medication such as Dilantin, consult a health provider before using it.

Vitamin B-7 (Biotin)

Biotin is a cofactor in energy metabolism, fatty acids, and glucose handling. Excessive use of oral antibiotics, raw egg whites, and antiseizure medications can lead to biotin deficiency. Biotin is helpful for hair growth, insulin sensitivity, and depression.

Contraindications: None. Safe at moderate doses in pregnancy and nursing.

Vitamin B-8 (Inositol)

Inositol is an essential supplement for the treatment of bipolar disorder and OCD. It is usually supplemented in addition to the B-complex. Inositol supports brain health and improves mood and overall nervous system function. In clinical trials, inositol was effective in the treatment of depression, panic attacks, agoraphobia, OCD, bulimia nervosa, and binge eating (Costa & Tavares, 2021; Fabbri & Savasi, 2021; Kani & Meidan, 2022).

Contraindications: High doses can cause an upset stomach or nausea. Effects in pregnancy are unknown.

Vitamin B-9 (Folate/Folic Acid)

Vitamin B-9, known as folate in its natural form and as folic acid in its synthetic form, plays a crucial role in various physiological and mental health processes. Folate is found in plant and animal foods such as beets, legumes, avocados, and leafy greens, whereas folic acid is commonly used in supplements and fortified foods. The active derivative, L-methylfolate (5-MTHF), is directly involved in the synthesis of key neurotransmitters—serotonin, norepinephrine, and dopamine—that are essential for mood regulation. A significant body of research supports a strong correlation between folate deficiency and depression, with studies indicating that individuals with lower folate levels tend to experience higher rates of depression and often respond poorly to standard antidepressant therapy.

Approximately 40% of the population carries a genetic variant of the *MTHFR* gene, which impairs enzyme function related to folate metabolism. Of these, about 15% are homozygous for this variant, resulting in a more profound deficiency (Long & Goldblatt, 2016). This deficit also contributes to elevated homocysteine levels, a marker associated with cardiovascular and mental health concerns. For individuals with the *MTHFR* variant, 5-MTHF offers a beneficial supplement option, as it bypasses the need for enzymatic conversion and raises folate levels in the blood more efficiently than folic acid, directly supporting neurotransmitter production and mental health

Contraindications: While 5-MTHF generally has limited side effects, higher doses may cause digestive discomfort. In cases of high systemic inflammation, some individuals may experience irritability and insomnia. For optimal support, it is advisable to start with a low dose of MTHF (around 1 mg) and include supplemental methyl B-12 to maintain balanced methylation. Adding niacin can also help manage folate metabolism and potentially mitigate any adverse effects.

Vitamin B-12

B-12 is an essential vitamin used to treat depression, fatigue, anxiety, and psychosis. B-12 is a cofactor in the methylation process leading to S-adenosyl-L-methionine (SAM). Vitamin B-12 is an anxiolytic (Prousky, 2005). The preferred form of Vitamin B-12 is methylcobalamin (methyl-B-12), not cyanocobalamin. Take methyl-B-12 under the tongue (sublingual)

for depression, anxiety, and cognitive function. Other beneficial forms of B-12 include adenosylcobalamin and hydroxocobalamin, especially useful when targeting mitochondrial health and when enhancing methylation is unnecessary.

People who do not eat (a lot of) meat or are over the age of 65 are candidates for supplementation, along with vegetarians and vegans (Leyse-Wallace, 2008). Vitamin B-12 deficiencies are also common in people with Crohn's disease, liver disease, chronic stress, a gluten allergy, or malabsorption disorders, as well as people who have had bariatric surgery or who use proton pump inhibitors (Tarling et al., 2022), acid blockers, alcohol, tobacco, or coffee. The diabetes medication metformin depletes the body of B-12 (Sun et al., 2023), as do oral contraceptives (Gannage-Yared et al., 2022), birth control pills, and antibiotics. Nutritional yeast with added methylcobalamin is a food source for B-12. However, vegans and vegetarians should supplement with a sublingual pill or liquid to obtain a sufficient amount.

Contraindications: None. It may cause nausea at high doses.

Choline

Choline is found naturally in cell membrane lipids in the brain and is involved in synthesizing acetylcholine, the "memory" and "learning" neurotransmitter. The three commonly used forms of choline used for mental health are phosphatidylcholine, cytidine-5'-diphosphate choline, also called citicoline, and alpha-glyceryl phosphorylcholine (GPC). Citicoline breaks down into phosphatidylcholine, which then breaks down into alpha GPC. These forms of choline are potentiated when added to coffee or tea. Each form of choline has a role to play in health.

Phosphatidylcholine is incorporated directly into cell membranes and is a precursor to acetylcholine. Phosphatidylcholine is anti-inflammatory (Buang et al., 2005) and used for the treatment of alcohol-related and non-alcohol-related fatty liver disease (Maev et al., 2020).

CDP choline crosses the blood-brain barrier more directly, increasing brain acetylcholine levels. CDP choline also supports the dopamine and glutamate neurotransmitters and phospholipid metabolism, enhancing the integrity of neuronal membranes (Kansakar et al., 2023). CDP choline supports recovery, increased independence in head trauma patients, and improved cognition and memory (Matta et al., 2024; Secades & Frontera, 1995). Doses for CDP choline range from 500 to 700 mg t.i.d.; 500 mg CDP

choline twice daily may help reduce cravings for cocaine (Renshaw et al., 1999).

Alpha GPC choline is a precursor to acetylcholine and GABA and promotes hippocampal neurogenesis (X. Li et al., 2023) and cognition (Moss & Oliver, 2022). It is a European prescription drug for Alzheimer's disease. Studies show improvement in mild to moderate Alzheimer's disease at 1,200 mg a day alpha GPC choline for 6 months and 600 mg for 3 months, with significant improvement in cognitive function (Jeon et al., 2024).

GPC stimulates nerve growth and increases phospholipid synthesis (Aleppo et al., 1994) and thus may be helpful as an add-on treatment for schizophrenia (Ghajar et al. 2018).

All these forms of choline protect the brain, prevent cognitive decline, and treat stroke and dementia. Choline has been combined with lithium (carbonate) to reduce manic symptoms in bipolar disorder (Lyoo et al., 2003).

Contraindications: None have been observed at moderate doses. It may be mentally stimulating, so take it early in the day.

Vitamin C (L-Ascorbic Acid/Ascorbate)

Vitamin C is an antioxidant found in citrus and other fruits and vegetables. It protects the body from oxidative stress, aids iron absorption, and supports the immune system. Vitamin C requirements increase during times of emotional and physical stress. People who smoke, children fed formula, and people with malabsorption are vulnerable to low Vitamin C. Deficiencies lead to fatigue and joint pain. A good-quality Vitamin C is a *complex* (not just ascorbic acid) and contains bioflavonoids and rutin. Eating some of the pulp of citrus fruits also provides some of these bioflavonoids.

Contraindications: High doses can contribute to kidney stone formation and cause gas, nausea, and diarrhea. To combat infection, it should be used at a dose of 1–2 grams every 2 hours for only a day or so.

Vitamin U (Methylmethionine)

Though technically not a vitamin, "Vitamin U" is the name given to S-methylmethionine because it is found in raw cabbage (juice) and helps heal peptic ulcers (Cheney, 1952), hence U for ulcers. Use it to treat GERD and stomach inflammation (Samonina & Kopylova, 2021). Look for a compound that combines Vitamin U and chlorophyll.

Contraindications: It should be used for only 1–2 months, after which hydrochloric acid (HCl) supplementation can begin.

Essential Fat-Soluble Vitamins for Mental Health

Vitamin A and β-Carotene

Vitamin A comprises a soluble group of compounds called retinoids, which support immune function by producing thyroid hormones. β-Carotene is an orange-red pigment found in vegetables and fruits like carrots, sweet potatoes, spinach, and kale that the body converts into Vitamin A as needed. β-Carotene is a potent antioxidant that significantly supports cognitive function (Abrego-Guandique et al., 2023).

Contraindications: People who smoke should consult with their provider before supplementation with β-carotene.

Vitamin D

Vitamin D may be the most important fat-soluble vitamin for preventing and treating depression (Mikola et al., 2023) and chronic pain (Lombardo et al., 2022). Vitamin D is made up of D-2 and D-3. It is not a vitamin but a neurohormone that helps the body absorb calcium, magnesium, phosphate, iron, and zinc. Cholesterol is a precursor to Vitamin D. Vitamin D is produced when sunlight triggers the conversion of provitamin D into Vitamin D-3. Vitamin D receptors in the brain stimulate serotonin production, and Vitamin D increases endorphin levels in the brain and supports healthy aging. Most people in the United States, especially those in the northern regions, are Vitamin D deficient. People with celiac disease and autoimmune illnesses are often Vitamin D deficient (Cutolo & Gotelli, 2023). Vitamin D-3 can be obtained in the diet, but exposure to sunlight is essential in obtaining sufficient Vitamin D, though absorption rates drop off by 75% by age 70. At sea level, one should aim for 30 minutes a day of exposure to sunlight and expose at least 20% of the skin. People living above the 37th parallel should double their daily sun exposure and supplement. Emulsified Vitamin D is ideal for high-dose Vitamin D with just a few drops daily. Several genomic SNPs can affect Vitamin D metabolism, absorption, and receptor function, necessitating higher dosing.

25(OH)D levels higher than 50 nmol/L are necessary to improve depression (R. Wang et al., 2024). Doses range from 50 to 250 mcg Vitamin D-3.

Contraindications: There are few contraindications, but as this is a fat-soluble vitamin, monitor blood levels every 6–12 months. If blood calcium

levels are high, as with parathyroid disease, consult a practitioner before using high doses.

Vitamin E

Vitamin E is composed of eight fat-soluble antioxidant compounds called tocopherols and tocotrienols. A balanced Vitamin E complex contains tocopherols and tocotrienols. However, tocopherols interfere with the absorption and efficacy of tocotrienols. Tocopherols and tocotrienols have different mechanisms of action at the cellular level. Tocopherols primarily act as antioxidants, while tocotrienols are neuroprotective. If taking a balanced Vitamin E complex higher in tocopherols, supplement tocotrienols separately. Annatto (*Bixa orellana*) is a rich source of tocotrienols. Dose up to 600 mg/d.

Contraindications: No known contraindications.

Vitamin K

Supplementation should include both K-1 (phylloquinone) and K-2 (menaquinone) along with Vitamin D. Vitamin K-2 is essential for nerve health in the brain, and higher levels of K-1 are associated with better cognitive function (Presse et al., 2013) and less depression (Bolzetta et al., 2019). Vitamin K supports bone density by transporting calcium from the blood to the bones, and it plays a vital role in blood clotting. Vitamin K-2 promotes cardiovascular health and helps prevent calcium deposits in the aorta. Meat, eggs, and dairy products contain Vitamin K-2, which is more bioavailable than Vitamin K-1. Dose at 2,000–8,000 mcg/d.

Contraindications: People taking anticoagulants (blood thinners) should consult a health provider before use.

Essential Minerals for Mental Health

Minerals and Trace Elements

Minerals are the body's spark plugs (Watts, 2006), supporting the transformation of food into assimilable nutrients. There are two categories of minerals: *macrominerals*, which include calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulfur; and *trace minerals*, which are required in lesser amounts, like iron, manganese, copper, iodine, zinc, lithium, cobalt, fluoride, and selenium. An excess or deficiency of macrominerals or trace elements can affect mental well-being and cognitive function.

Effective mineral supplementation starts with a *balanced supplement* that includes easily absorbed chelated minerals. All minerals are essential, and once a broad spectrum of minerals is supplemented as part of the protocol, higher doses of some minerals may be added as needed to enhance mental health and cognitive function.

Calcium, chromium, iodine, iron, lithium, magnesium, potassium, selenium, sodium, and zinc are among the most essential minerals for mental health.

Mineral Testing

Laboratories offer mineral testing of the hair (hair tissue mineral analysis). Red blood cell (RBC) analysis of magnesium, potassium and zinc testing, and urine mineral analysis.

Key Minerals

Table 7.3 lists the essential minerals required for mental well-being and their food sources and dose ranges. They are each discussed below.

Chromium

Chromium is an essential mineral that regulates blood sugar by facilitating the glucose-insulin balance. It is best combined with niacin, Vitamin B-6 (pyridoxal 5'-phosphate), and fiber. Chromium is used for depression and mood regulation associated with hypoglycemia and is effective in decreasing carbohydrate cravings and binge eating (Basiri et al., 2023). Pregnancy, intense exercise, and traumatic injury increase chromium needs. Use the form of chromium picolinate. Picolinic acid aids the absorption of chromium. The dose ranges from 600 to 1000 mcg/d for binge eating disorder and depression, and 200 mcg b.i.d. to t.i.d. for hypoglycemia and mood regulation.

Contraindications: Few, if any, side effects or contraindications have been observed at regular dose levels.

Lithium

Lithium is an essential mineral for mental health and should be among the first supplements chosen for mood disorders. Lithium is an effective alternative to psychotropics when used as part of a complete supplementation program (Strawbridge et al., 2023).

The mineral lithium (orotate or aspartate) should not be confused with the medication lithium carbonate, which is used to treat bipolar disorder.

Lithium carbonate has serious side effects and should be avoided. Lithium orotate crosses the blood-brain barrier, whereas the carbonate form does not; thus, lower doses of the former are effective (Lakhan & Vieira, 2008).

Lithium lengthens the circadian rhythm, accounting partly for its positive effect on mood disorders. Lithium is a natural mineral in water supplies, including streams and hot springs worldwide. It exerts a protective effect on lowering suicide rates and preventing mood. Lithium orotate's mechanisms include the modulation of glutamate and GABA neurotransmitters and upregulation of BDNF. Lithium's inhibition of glycogen synthase kinase-3 (GSK-3) is believed to contribute to its mood-stabilizing effects, particularly in bipolar disorders (Chatterjee & Beaulieu, 2022). Lithium is neuroprotective and anti-inflammatory, increases hippocampal volume, increases brain-derived neurotrophic factor (BDNF), and reduces the risk of the development of Alzheimer's disease in bipolar patients who take it regularly (Diniz et al., 2013; Hamstra et al., 2023).

People with bipolar disorder, depression, cognitive decline, and memory loss (Forlenza et al., 2011; Nunes et al., 2013) or who are suicidal (Memon et al., 2020) or in alcohol recovery and relapse prevention (Sartori, 1986) can all benefit from lithium orotate combined with L-methylfolate (5-MTHF), methylcobalamin (B-12), and magnesium. The low dose range of the mineral lithium is 5–20 mg/d. Doses can increase to 50 mg/d.

Contraindications: Not to be taken by pregnant and lactating women. Not to be taken in conjunction with SSRIs or monoamine oxidase inhibitors (MAOIs) unless advised by a health professional. There are no adverse effects identified with low-dose lithium (Strawbridge et al., 2023). However, kidney and thyroid function should be monitored with long-term use or higher doses.

Magnesium

Magnesium supplementation is essential for everyone, but especially for those experiencing chronic stress, alcohol abuse, kidney disease, and celiac disease, as they are more prone to deficiencies. Magnesium is anxiolytic and antistress (Pickering et al., 2020) and supports healthy cognitive function and mood. Deficiency is common. Signs of magnesium deficiency are body odor, muscle tension, irritability, and poor sleep.

Magnesium is a natural sedative; it helps muscles relax and plays a vital role in insulin sensitivity, calcium absorption, cardiovascular health, protein synthesis, bone health, and energy metabolism. Magnesium supplementation

is a quick and straightforward approach to reduce anxiety, insomnia, and muscle tension. It is effective in depression and bipolar disorder. It regulates blood sugar and blood pressure. Magnesium improves serotonin synthesis and reduces inflammation and oxidative stress. Supplementing with magnesium is also beneficial for restless leg syndrome, fibromyalgia, irritability, and constipation.

Adequate magnesium intake is essential for cognitive health, yet it is not easily absorbed in high doses and does not cross the blood-brain barrier. The most absorbable forms of magnesium are glycinate and L-threonate, developed to cross the blood-brain barrier. Glycinate improves short-term memory (Abumaria et al., 2011) and increases overall cognitive function (Slutsky et al., 2010). L-threonate is an antidepressant and can dampen traumatic memories (Abumaria et al., 2009). SAD diets tend to have higher levels of calcium than magnesium. Take magnesium at night to sleep and during the daytime for mental and muscle relaxation.

Table 7.2 lists the types of magnesium and their various applications.

Contraindications: Monitor magnesium intake levels with kidney disease. Magnesium should be taken separately from bisphosphonate medications.

TABLE 7.2
Types of Magnesium

Type	Use	Optimal Dose Range
Magnesium aspartate	Supports energy via ATP production, reduces fatigue Highly bioavailable	300–500 mg elemental Mg
Magnesium carbonate	Neutralize stomach acid, heartburn, indigestion Low bioavailability, thus less effective for people with low stomach acid	200–400 mg elemental Mg
Magnesium citrate	Laxative, muscle tension Treats magnesium deficiency Highly bioavailable	200–400 mg elemental Mg
Magnesium chloride	Improves magnesium deficiency Use topically Highly bioavailable	200–500 mg elemental Mg

Type	Use	Optimal Dose Range
Magnesium oxide	Laxative, GERD, constipation Moderate bioavailability	250–400 mg elemental Mg
Magnesium malate	Chronic pain, fatigue, fibromyalgia Supports energy production via ATP	200–500 mg elemental Mg
Magnesium taurate	Both magnesium and taurine help regulate blood pressure and calm the nervous system Highly bioavailable	150–500 mg elemental Mg
Magnesium lactate	Improves chronic fatigue, increases energy, and reduces muscle spasms Ideal for people with sensitive digestive systems Highly bioavailable	200–400 mg elemental Mg
Magnesium glycinate	Anxiety, insomnia, and stress Gentle on digestion Highly bioavailable	200–400 mg elemental Mg
Magnesium orotate	Orotic acid helps produce RNA and DNA, cardiovascular support, cellular repair, and enhanced athletic performance	150–400 mg elemental Mg
Magnesium sulfate (Epsom salt)	Use in bath or foot soaks to reduce muscle soreness and inflammation Oral use as a laxative (though there are better laxative options) and as part of a liver flush protocol	Soaking topically: 1 cup in a basin or bathtub Laxative: 1–2 tablespoons in a little warm water
Magnesium L-threonate	Developed to cross the blood-brain barrier Supports cognitive function, memory, neuroplasticity, and brain health Highly bioavailable	144–2,000 mg (48–144 mg elemental magnesium)

Potassium

A balanced potassium-sodium ratio regulates blood pressure, heart function, and energy production. Alcoholism and the use of diuretics disrupt potassium in the body. The SAD diet is significantly lower in potassium and

higher in sodium than the traditional food diets of our ancestors. Early humans consumed about 800 mg sodium and 10,000 mg potassium daily; the SAD diet averages 4,000 mg sodium and 2,500–3,400 mg potassium daily. This imbalance underlies hypertension, which is not evident among people in traditional societies: lower salt (sodium) intake (1,500 mg/d) and increased potassium-rich foods and mineral supplementation are beneficial. Low-sodium/high-potassium diets also improve mood (Torres & Nowson, 2012).

Potassium deficiency is associated with eating disorders, alcohol abuse, excessive use of diuretics or laxatives, severe vomiting, diarrhea, magnesium deficiency, bulimia, and anorexia. Deficiency can cause depression, mood lability, fatigue, muscle weakness, dizziness, and abdominal pain. Dose range depends upon the type of supplemental potassium. Potassium citrate is easily absorbed. Dose potassium citrate at 99 mg unless the provider suggests a higher dose.

Contraindications: Dietary and oral potassium is generally safe. High doses can cause dizziness. People who are taking blood pressure medications should consult with a clinician.

Rubidium

Rubidium is a lesser-known mineral salt used since the 19th century for heart health and depression. It is a mild stimulant and antidepressant. It is mainly found in coffee and red meat. Clinical researchers discovered that their kidney dialysis patients who ate salami were less depressed and felt better and attributed this response to rubidium. It synergizes potassium and antagonizes lithium (Canavese et al., 2008). Rubidium is dosed at 100 mcg for depression.

Contraindications: Excessive use can be overstimulating.

Selenium

Selenium reduces oxidative stress, elevates mood, reduces inflammation, and supports the thyroid and immune system. This makes selenium an essential mineral for depression, anxiety, psychotic disorder, and cognitive function (Y. Huang et al., 2023; Karkoszka et al., 2024). Selenium is a component of most multivitamins, and additional selenium can be added for immune and mood support.

Contraindications: Very high doses of selenium can be toxic.

Zinc

Zinc is one of the most abundant minerals in the brain. It acts as an antidepressant (Greenblatt et al., 2016; Levenson, 2006) and is beneficial for cognitive function in older adults (Maylor et al., 2006). It should always be supplemented in bulimia and purging disorder. Zinc citrate or zinc picolinate are both highly available. Doses range from 25 to 100 mg/d.

Contraindications: Very high doses of zinc should be avoided as it can contribute to urinary tract infections.

Zinc Carnosine

Zinc carnosine is a combination of zinc and carnosine. It is used to treat stomach ulcers (Wollschlaeger, 2003) and GERD and to relieve GI upset, such as bloating, heartburn, nausea, and stomach pain. It promotes the growth of healthy bacteria, increases healthy mucus secretion, stabilizes the gut lining, and reduces inflammation through its antioxidant properties (Watari et al., 2013). When supplementing HCl for the treatment of depression and anxiety, first use Gastrazyme™ (Vitamin U and chlorophyll) and zinc carnosine to treat GERD and *H. pylori* before HCl supplementation. The dose range is 75 mg (16 mg/zinc) b.i.d.

Contraindications: No side effects or contraindications. However, high doses can disrupt copper and iron metabolism.

Sodium

Sodium is essential for nervous system function. It keeps minerals soluble in the blood and stimulates the adrenal glands. While processed foods have too much sodium and can be detrimental to health, too little sodium is also harmful. Severe reduction of salt can lead to too little sodium in the diet. Supplementing sodium is best done in the form of mineral-rich sea salt, which is beneficial for adrenal stress and fatigue.

Contraindications: Sodium supplements are unnecessary. Avoid table salt and avoid too much sea salt if you have high blood pressure or are salt-sensitive. Salt-sensitive people are often dehydrated and benefit from more water.

Calcium

Calcium is an essential mineral used to grow and maintain healthy bones. It also plays a role in muscle contractions, blood coagulation, hormone and enzyme release, and blood flow. Calcium absorption is supported by Vitamin D. Overuse of calcium supplements, for example, by postmenopausal women, can lead to fatigue, exhaustion, headaches, depression, anxiety, and

insomnia (Watts, 2006). Overconsumption of calcium may inhibit zinc, phosphorus, and copper absorption. SSRIs inhibit calcium absorption into bones, thus increasing fracture risk (Kang et al., 2021). Foods rich in calcium often contain these other nutrients; thus, eating calcium-rich foods or balanced supplements is beneficial. Calcium hydroxyapatite from animal bones is highly absorbable, contains phosphorus, and is a preferred form of calcium, followed by calcium citrate-malate, which is absorbed with or without food. Calcium carbonate, used in over-the-counter antacids, can be used when needed. Calcium supplementation must include a diverse mineral protocol, Vitamins D and K, and a mineral-rich diet. The dose range is 500–1000 mg/d.

Contraindications: Avoid excessive calcium use. The use of calcium with thiazide diuretics, antibiotics, thyroid medication, and bisphosphonates needs to be assessed.

Box 7.3

Recipe: Calcium-Rich Soup

Calcium is absorbed when obtained from calcium-rich food. This recipe is an ideal way to obtain calcium, and it takes about 10 minutes to prepare when using a slow cooker. Throw in everything early in the morning; by evening, you have a nourishing soup children and adults will enjoy.

Makes 8–10 servings

Ingredients

For slow cooking

- 8 cups bone broth (plus 1–2 marrow bones if you have them)
- 2 cups dry pinto beans
- 1 head broccoli, including stems, slightly chopped
- 4 potatoes, cubed
- One bunch kale, chopped
- Pinch of seaweed

Before serving

- Pinch of sea salt
- Pinch of black pepper
- 3 tablespoons blackstrap molasses
- Walnuts for topping

Directions

Add all the slow-cooker ingredients to a medium-sized slow cooker and cook on low for 8 hours. When done, add a pinch of sea salt, black pepper, and 3 tablespoons of blackstrap molasses, and mix well before serving. Top it with walnuts.

Copper

Copper regulates cellular energy production and neurotransmission. A deficiency of copper may be caused by a high dietary or supplemental zinc intake or a high-sugar diet, which can cause neurologic disorders. Both low (J. Chen et al., 2023) and high copper levels are linked to depression and may result from drinking well water. Antacids interfere with the absorption of copper.

Copper bisglycinate is the preferred form for supplementation. Always combine with zinc supplementation to ensure a correct ratio and 1–2 mg/d dose.

Contraindications: High levels of copper are associated with depression. As a trace mineral, use it in microdoses.

Boron

Boron is used in very small amounts and appears to enhance brain function, cognitive performance, and memory (Penland, 1998). Dose at 1–10 mg/d.

Contraindications: There are no apparent contraindications or side effects.

Iodine

Iodine deficiency can result in brain damage, goiter, growth, and developmental and hypothyroidism disorders. Goiter (thyroid enlargement) is an early sign of iodine deficiency. Hypothyroidism is linked to depression, fatigue, and cognitive decline. Sufficient iodine is essential for children’s brain development. Vegetarians and athletes are more susceptible to iodine deficiency. Food sources of iodine include seafood, seaweed, and iodized salt. Supplementation can benefit fatigue, ADHD, and ASD. The dose range is from 150 mcg to 3 mg for hypothyroidism.

Contraindications: Supplementation should be done under the guidance of a health practitioner.

Iron

Iron is a central component of hemoglobin and is responsible for transporting oxygen throughout the blood, energy production, brain development, and immune function. Iron deficiency increases the risk of

mood disorders, ASD, ADHD (McWilliams et al., 2022), fatigue, anemia, poor cognitive function, and developmental disorders. Iron deficiency is widespread; menstruating or pregnant women are more at risk for iron deficiency. However, excess iron is toxic and even lethal. Both animal and plant foods are a source of iron. Low HCl in the stomach can prevent the breakdown of iron. Anemia is often due to missing cofactors (Vitamin B-12, Vitamin B-6, and folate) and not iron per se. Vitamin C improves iron absorption. When supplementing, consider adding zinc, Vitamin B-12, and copper. Dose heme iron 33–99 mg depending on need. Vegetarians may use a juice like Floradix™ F made from iron-rich vegetables like spinach and nettles.

Contraindications: Iron should only be supplemented under the advice of a health professional. It is best obtained through diet.

Manganese

Manganese is involved in synthesizing dopamine and glutamate, particularly dopamine, and is a cofactor for the enzyme manganese superoxide dismutase (MnSOD), a critical antioxidant enzyme in the mitochondria that protects brain cells from oxidative stress. People who work in mining, steel production, and welding may become exposed to high levels of inhaled manganese, leading to cognitive decline and neurological disorders. Manganese is a cofactor for synthesizing glycosaminoglycans and is vital for musculoskeletal health.

TABLE 7.3
Minerals for Mental Well-Being

Mineral	Dietary Sources	Mental Health Benefits	Symptoms of Deficit	Dose Ranges
Calcium	Dairy products, fortified breakfast cereals, greens, nondairy milks, spinach	Nervous system communication	Irritability, anxiety Depression with excessive intake	500–1,000 mg o.d.[a]
Chromium	Brewer’s yeast, liver, mushrooms, whole grains	Helps regulate blood sugar levels Regulates and improves mood		Binge eating disorder, depression: 600–1,000 mcg o.d.

Mineral	Dietary Sources	Mental Health Benefits	Symptoms of Deficit	Dose Ranges
		Reduces carbohydrate cravings		Hypoglycemia and mood regulation: 200 mcg b.i.d. to t.i.d.
Copper	Asparagus, avocado, chocolate, grains, kale, molasses, mushrooms, nuts, seafood (esp. oysters lobster), sesame seeds/tahini	Enables the conversion of dopamine into norepinephrine; mood, motivation, and alertness Cofactor for superoxide dismutase (SOD) protects neurons from oxidative stress. Supports myelin sheaths, for nerve signaling and cognitive function	Overdose causes weakness, fatigue, reduced immunity, thyroid problems Toxicity may cause fatigue, premenstrual syndrome, anorexia, depression, anxiety, allergies, autism, schizophrenia, postpartum depression	Copper bisglycinate, 1–2 mg o.d.
Iodine	Eggs, iodized salt, fish, milk, mozzarella cheese, sea vegetables, shellfish, strawberries, yogurt	Promotes thyroid hormones	Developmental delays Depression Brain damage and cognitive decline	Short term use: 12–25 mg o.d. Hypothyroidism: 150 mcg to 3 mg
Iron	Beans, beef, beef liver, chicken, chicken liver, clams, halibut, ham, lentils, mollusks, mussels, oysters, pumpkin seeds, sardines, sesame seeds,	Boosts immunity	Fatigue Reduced work performance	Heme iron 33–99 mg Nonheme iron, juice sources

Mineral	Dietary Sources	Mental Health Benefits	Symptoms of Deficit	Dose Ranges
	spinach, tofu, turkey, veal			
Lithium	Eggs, lemons, mineral water, seaweed, sugarcane	Cognitive function, sleep, mood, PTSD and TBI		5–100 mg o.d. (lithium orotate or aspartate)
Magnesium	Almonds, avocado, black beans, cashews, fortified foods, legumes, nuts, oatmeal, peanuts, seeds, spinach, whole grains, yogurt	Promotes healthy blood sugar, blood pressure levels Reduces oxidative stress Reduces inflammation		400–1,200 mg o.d.[b]
Manganese	Almonds, brown rice, cloves, chickpeas, oats, peanuts, pecans, pineapple, pinto beans, pumpkin seeds, rye, spinach, sweet potato, tempeh	Antioxidant Metabolizes carbohydrates, fats, amino acids, cholesterol	Low manganese is associated with, but does not cause, poor glucose tolerance, skin rashes	1–2 mg as part of a multivitamin
Potassium	Bananas, beets and beet greens, blackstrap molasses, carrots, clams, cod, halibut, prunes, turkey, salmon, spinach, sweet potatoes, tomatoes, tuna, winter squash, yogurt	Electrical conductivity Transports serotonin in the brain Delivers oxygen to the brain, improving cognitive function	Depression, anorexia, insomnia, mental fatigue, anxiety, mood swings, psychosis, nervous system disorders, confusion	99 mg potassium orotate
Selenium	Bananas, beets, Brazil nuts, dairy products (raw), eggs, fish	Elevates mood Supports thyroid function	Cognitive decline and Alzheimer's disease	10–50 mg o.d.

Mineral	Dietary Sources	Mental Health Benefits	Symptoms of Deficit	Dose Ranges
	skins, garlic, grains, meat, onions, organ meats, prunes, salmon, sardines, spinach, turkey			
Silicon	Almonds, apples, artichokes, asparagus, beans, beets, celery, cherries, cucumbers, grapes, greens, lettuces, onions, oranges, peanuts, peas, plums, pumpkin seeds, radishes, raisins, sunflower seeds, whole grains	Supports bone health, collagen formation, aids aluminum excretion	Cognitive decline and Alzheimer's disease	Drink mineral water rich in silicon
Sodium	Baking powder, baking soda, bananas, cheese, seafood, soy sauce, table salt	Supports adrenal function, especially under stress and fatigue May increase blood pressure	Lethargy, fatigue, confusion, irritability, hallucinations	Add mineral-rich sea salt to the diet Ensure adequate potassium intake
Zinc	Beef, cashews, chickpeas, grains, lamb, lentils, nuts, oysters, poultry, pumpkin seeds, quinoa, sesame seeds, shrimp, turkey	Promotes immune function, insulin production Anti-inflammatory Antidepressant Antioxidant Digestive aid	Depression, autism, schizophrenia, aggression, ADHD, learning difficulties, impaired memory, seizures	Binge eating disorder and bulimia or purging: 25 mg t.i.d. Zinc carnosine is used for gastritis ulcers, *H. pylori* and GERD 75 mg b.i.d.

[a]Avoid calcium carbonate.

[b]Dose to bowel tolerance.

Special Nutrients, Herbs, and Supplements

Table 7.4 describes special nutrients that are essential for mental well-being along with their sources and dose ranges. Each is discussed below.

TABLE 7.4
Special Nutrients, Herbs, and Their Mental Health Benefits

Nutrient	Benefits	Dose
Cannabis	Reduces pain Lowers rate of type 2 diabetes Lowers insulin levels May be beneficial in Alzheimer's disease Antidepressant Anxiolytic Decreases and reverses intestinal permeability associated with inflammation	Obtain cannabidiol (CBD)-rich strains versus strains high in tetrahydrocannabinol (THC), a psychoactive substance. CBD targets symptoms of psychosis, anxiety and depression. Work with an informed prescriber.
CoQ10 (liposomal)	Cellular health, cardiovascular support, mitochondrial support in EBV and long COVID	200–1,200 mg o.d.
Green tea (epigallocatechin gallate, L-theanine)	Improves cognitive health Prevents Alzheimer's disease Reduces anxiety Improves learning and memory	100–400 mg o.d.
Lactium (milk-derived biopeptides)	Reduces stress Reduces cortisol levels Induces relaxation Improves mental function, digestion, cardiovascular health, and social interactions	Anxiety: 150–300 mg o.d. Insomnia: 450–600 mg o.d.
Lipoic acid	Antioxidant Slows the progression of mild Alzheimer's disease	300–1,200 mg o.d.
Melatonin	Regulates circadian rhythm Antioxidant Induces sleep Improves sleep quality	0.05–3 mg o.d. For OCD: 0.3–5 mg (sometimes up to 10 mg)
Nattokinase	Reduces fibrin in the blood	4,000–12,000 FU o.d.[a,b]

Nutrient	Benefits	Dose
	Circulation and cardiovascular health Neuroinflammation Cognitive function in elderly Dementia	
Phosphatidylserine	Improves memory and cognitive function Regulates cortisol levels Supports memory in chronic stress, depression, PTSD, and TBI	100 mg t.i.d. or up to 400 mg/d
Pregnenolone	Anxiolytic Improves cognition and long-term memory, psychosis	50–100 mg o.d.; up to 500 mg for psychosis
Psychobiotics	Improves digestive problems Reduces intestinal permeability Reduces gut inflammation Increases healthy gut microbiota Reduces anxiety	Depending on strain(s), ranges from 10 billion to 50 billion per day
Proteolytic enzymes	Relieves depression, pain, schizophrenia, and fibromyalgia	For general anti-inflammatory purposes, 20,000–60,000 FU o.d.[a,b] For chronic inflammation, 120,000–240,000 FU o.d.[a,b]
Pyrroloquinoline quinone (PQQ)	Improves mitochondrial function Antioxidant and anti-inflammatory Improves fatigue, anxiety, and sleep	20 mg o.d. For cognitive function, combine with CoQ10
S-adenosyl-L-methionine (SAM)	Relieves depression Improves survival or delays liver transplantation in patients with alcoholic liver cirrhosis	400–600 mg o.d.[c]
Uridine-5' monophosphate (UMP)	Increases CDP choline in the brain Improves memory	50–100 g o.d.
Urolithin A (UA)	Mitochondrial health Anti-inflammatory Enhances muscle strength, endurance, cognitive function Overall antiaging benefits	250–500 mg b.i.d.

[a]Take before bed.

[b]Take away from food.

[c]Brown et al. (2000).

Cannabis

Cannabis is a plant resource that complements dietary and nutritional supplement interventions for mental health and digestive disorders. People who experience depression, chronic pain, neurological diseases, PTSD, inflammatory bowel disease, and psychotic disorders self-medicate with cannabis. About 10% of people who use cannabis regularly will experience cannabis use disorder. Like all health interventions, cannabis and its various compounds will be helpful to some people and not to others. The most critical decision about using medical cannabis is whether it can help the specific individual alleviate symptoms and, if so, what specific type of cannabis and its ratio of constituents THC, CBD, and terpenes. This assessment of the client and the type of cannabinoids and ratios will determine the dose, delivery system, and outcomes. While we apply this approach to decisions about all medications, nutrients, and herbal medicine, people may forget to apply this to the specific use of cannabis to optimize outcomes.

Two significant constituents (of hundreds) of cannabis are THC, the psychoactive component, and cannabidiol (CBD), a phytocannabinoid that lacks the psychotropic effects of THC and has antipsychotic-like properties (Zuardi et al., 2006), targeting the metabolic, inflammatory, and stress-related components of schizophrenia (Robson et al., 2014). Terpenes are a third essential constituent of cannabis, contributing to the therapeutic effects of cannabinoids. Terpenes are aromatic compounds that work synergistically with THC and CBD. This synergy is called the “entourage effect.”

Cannabis does not cause psychosis (Ethan Russo, pers. comm., 2023). However, THC can induce transient psychotic symptoms in healthy individuals and exacerbate or precipitate symptoms in those predisposed to psychotic disorders (Sarris et al., 2020). THC is the primary psychoactive chemical that contributes to adverse side effects. Smoking strains of cannabis containing CBD in addition to D9-THC may be protective against the psychotic-like symptoms induced by D9-THC alone (Morgan & Curran, 2008), and high-CBD-content medical cannabis may provide an alternative for one-third of people who do not respond to conventional antipsychotic

medication (Robson et al., 2014). Cannabis use is associated with a lower rate of type 2 diabetes and lower insulin levels. The psychoactive component of cannabis, THC, may be beneficial in Alzheimer's disease because it inhibits the enzyme acetylcholinesterase (AChE) as well as prevents AChE-induced β-amyloid buildup (Eubanks et al., 2006; Liu, 2024).

Significant evidence supports cannabis use (1:1 CBD: THC) as an antidepressant and low-THC/high-CBD cannabis for anxiety (Sarris et al., 2020). At low doses, cannabis can improve depression, but at high doses it appears to increase it. Research demonstrates that the phytocannabinoids decrease and reverse intestinal permeability associated with inflammation (Alhamoruni et al., 2012), which may account for why people with inflammatory bowel disease use cannabis (Dalavaye et al., 2023).

Essential fatty acids (EFAs) are precursors to endocannabinoids and can enhance the endocannabinoid system to enhance immunity and mood. Omega-6 fatty acids like borage and hemp oil contribute to the production of anandamide (the bliss molecule), while omega-3 fatty acids like fish and flax contribute to the formation of 2-arachidonoylglycerol, which supports pain and immune regulation. Add dietary butter, hemp, and flaxseed oil along with fish oil supplements (2,000 mg/d) to provide a nutritional foundation to taper cannabis and treat cannabis use disorder.

Contraindications: People under the age of 18 should avoid the use of cannabis except under medical supervision.

Coenzyme Q10 (CoQ10)

CoQ10 is a fat-soluble antioxidant found in the mitochondria. It is a neuroprotective (Bagheri et al., 2023) and antidepressant (Majmasanaye et al., 2024). It is available in two forms: ubiquinol and ubiquinone. Ubiquinone is the oxidized form of CoQ10 and is converted into ubiquinol (the reduced form) in the body. Ubiquinol may have better bioavailability and be more effective for clinical outcomes. MitoQ is a modified ubiquinone version designed to enter mitochondria more effectively.

CoQ10 is an important nutrient beneficial for the treatment of heart disease, bipolar disorder, depression, fatigue, fibromyalgia, long COVID, and schizophrenia. Dose from 200 to 1,200 mg/d.

Contraindications: CoQ10 can reduce the body's response to blood-thinning (anticoagulant) medicine and decrease insulin requirements in people with diabetes.

Lactium (Milk-Derived Biopeptides)

Lactium is one of the most valuable nutrients to include in a protocol for people who are anxious, stressed, or experiencing insomnia. It is gentle and does not alter consciousness, so it is ideal for people who maintain sobriety. Developed in France, lactium is the generic name of bioactive milk-derived peptides. They are amino acid chains concentrated from casein, in cow's milk, that act on GABA receptors. Lactium reduces stress and cortisol levels while inducing relaxation and improving mental function, digestion, cardiovascular health, and social interactions (Kim et al., 2007). It improves sleep and cognitive function (Delini-Stula & Holsboer-Trachsler, 2009; Martins et al., 2022). It is an effective alternative to medication for anxiety (Khemakhem et al., 2020) and insomnia. It is not as powerful as a benzodiazepine but may be used as part of a tapering protocol. Dose from 150 to 450 mg b.i.d.

Lipoic Acid

Lipoic acid serves several functions as an antioxidant, including mitochondrial function and has been shown to slow the progression of mild Alzheimer's disease (Maczurek et al., 2008). Evidence suggests that 300 mg/d lipoic acid reduces oxidative stress and improves outcomes in people with schizophrenia (Mishra et al., 2022). There are two forms of lipoic acid: the S form and the biologically active "R" form, the preferred supplement. Dose range from 300 to 1,200 mg/d.

Contraindications: May lower blood sugar and thyroid hormones, higher doses may cause GI upset. Consult with a health provider if taking medication for diabetes or thyroid hormone replacement.

Melatonin

Melatonin is a hormone synthesized as the final metabolite by the tryptophan-serotonin pathway. Melatonin helps regulate circadian rhythm, the 24-hour sleep-wake cycle entrained to the dark/light rhythms of the moon and the sun. Since most mental illness is associated with circadian rhythm disruption and sleep disturbance, regulating circadian rhythm and restoring sleep are often the most effective initial intervention. Melatonin is antidepressant, anxiolytic, and neuroprotective in action and is helpful in mood disorders, PTSD, PMS, and cognitive function. Tryptophan or 5-HTP

may eliminate the need for melatonin supplementation directly. Melatonin can stimulate vivid dreams by enhancing REM stages of sleep.

There is growing widespread use of melatonin with children. However, the use of melatonin to aid sleep in children is ill-advised. It is a hormone with various rhythms throughout childhood and adolescence, and the cause of insomnia in children should be identified and treated. There are better nutritional and sleep hygiene interventions for children.

Contraindications: Some people do not respond to melatonin and others may experience side effects, such as feeling tired in the morning. The alpha and beta-blocking drugs used for hypertension can disrupt sleep by decreasing melatonin release (Stoschitzky et al., 1999). Alternatives to blood pressure medication include using potassium, magnesium, taurine, CoQ10, garlic, hawthorn extract, and fish oil, Cardiotone, CBT, and neurofeedback.

Urolthin A (UA)

UA is a postbiotic metabolite produced when the gut digests ellagitannins, compounds found in fruits like pomegranates and berries. UA plays a crucial role in stimulating mitophagy, a process that removes damaged mitochondria. It is anti-inflammatory and enhances muscle strength, endurance and cognitive function (Singh et al., 2022; Kuerec et al., 2024). UA production relies on specific gut bacteria, such as *Gordonibacter urolithinfaciens* and *Ellagibacter isourolithinifaciens*. Due to variations in gut microbiota, only about 40% of individuals can naturally produce it. Doses range from 250 to 500 mg twice daily.

Nattokinase

Nattokinase (nat-oh-KY-nase) is an enzyme extracted from natto, a traditional Japanese fermented soybean dish. Known for its high pyrroloquinoline quinone (PQQ) content, natto supports cardiovascular health by reducing fibrin levels in the blood, which helps improve circulation and prevent clot formation. Nattokinase has been studied for its potential to promote healthy blood flow and overall heart function, contributing to improved circulation and cardiovascular wellness.

Natto may reduce neuroinflammation and improve cognitive function in elders (Mahakalakar et al., 2025) and has been shown to degrade amyloid build up associated with dementia (Hsu et al., 2009). Dose at 4,000–12,000 fibrinolytic units (FU) per day.

Contraindications: People who take anticoagulant medications should consult with their health provider before using.

Nattokinase Indications: Biomarkers and Tests

- *Blood viscosity:* People with chronic inflammation, chronic fatigue, fibromyalgia, and long COVID should obtain a blood viscosity test. This test measures the thickness and stickiness of blood, which indicates how easily blood flows through the vessels. Nattokinase is an ideal supplement to reduce viscosity (standard blood test).
- *The D-dimer test* assesses fibrin formation and breakdown. Elevated D-dimer levels can be a marker of excessive fibrin activity in the body. Elevated levels suggest exploring the benefits of nattokinase (standard blood test).

Phosphatidylserine

Phosphatidylserine is a phospholipid, a vital component of the cell membrane. It is essential to transfer biochemical messages into the cells within the brain and CNS. It is an indispensable supplement for use in PTSD and complex trauma. Phosphatidylserine regulates cortisol levels via the HPA axis (Hellhammer et al., 2014) and increases acetylcholine in the brain; it supports memory in chronic stress, depression, ADHD, traumatic brain injury (TBI), and PMS. Egg yolks and liver are rich in phosphatidylserine. The dose range is 100–400 mg/d.

Pregnenolone

Pregnenolone, a neurosteroid, is a precursor to progesterone, cortisol, and testosterone and exerts neuroprotective, anti-inflammatory, and antianxiety properties. It modulates GABA, reduces anxiety (Pinna & Rasmusson, 2022), improves cognition and long-term memory, and may also prevent stroke and improve memory formation. Pregnenolone has been suggested for the treatment of schizophrenia to reduce negative symptoms and enhance memory (Marx et al., 2020, 2021) based on its ability to decrease inflammation. It is also used to treat opioid addiction (Concas et al., 2006) and cannabis withdrawal. It is moderately bioavailable suggesting liposomal or sublingual delivery is optimal and is often combined with DHEA. The dose of pregnenolone depends on the purpose and ranges from 50 to 100 mg for depression and anxiety, and is dosed at 500 mg for psychosis.

Contraindications: Do not take this product if you have a history of seizures. Consult with a provider if you have breast cancer, prostate cancer, or other hormone-sensitive diseases.

Psychobiotics

Everyone needs a healthy microbiome, achievable with a diet rich in fermented foods and psychobiotic supplementation. Supplementation is essential for people with a history of digestive problems, intestinal permeability, inflammation, alcohol and drug overuse, and people who have used antibiotics. Psychobiotics decrease anxiety and increase brain-derived neurotrophic factor (BDNF) levels, improving neuroplasticity (Mosquera et al., 2024). Eating kimchi decreases depression and anxiety (Sharma et al., 2021). Choose supplements that contain *Lactobacilli* and *Bifidobacteria*. *Saccharomyces boulardii* is also used as a yeast psychobiotic. Psychobiotics in our intestinal "garden" require a fiber and prebiotic-rich diet.

Synbiotics are a combination of probiotics and prebiotics and are available as supplements and in food combinations. Synbiotic food combinations include yogurt with bananas or berries, kefir with oats, sauerkraut with onions and garlic, kimchi with asparagus, and miso soup with leeks or onions. Freshly made, fermented foods are an ideal way to obtain diverse bacteria.

Supplemental psychobiotics can be expensive, and many require refrigeration. Psychobiotic quality is measured by colony-forming units (cfu), which estimate the number of viable bacteria in the sample, or by active fluorescent units (afu).

Proteolytic Plant Enzymes

Proteolytic enzymes are essential in clinical mental health nutrition practice and include papain (from the papaya), bromelain (from the pineapple) (Insuan et al., 2021), and serratiopeptidase, also called serrapeptase. Bromelain inhibits the cyclooxygenase enzyme and inhibits the synthesis of prostaglandin 2. It also breaks down fibrin and reduces swelling (Nair & C, 2022). Serrapeptase is a proteolytic enzyme derived from *Serratia marcescens*, found in the intestines of silkworms. Serrapeptase is perhaps the most potent anti-inflammatory (Nair & C, 2022). Trypsin is the foundation of treatment with pancreatic enzymes used in the Gonzalez and Isaacs (1999) cancer treatment method. These proteolytic enzymes reduce fibrin in

the blood and scavenge inflammatory cells. Pancreatic enzymes contain trypsin. These enzymes should form the foundation of anti-inflammatory treatment and be used for pain and fibromyalgia (with CoQ10). When used with food, papain and bromelain are digestive aids. Enzymes should be taken on an empty stomach, an hour before or after a meal, as an anti-inflammatory at a dose of 1,500 mg/d bromelain for general musculoskeletal pain from exercise and stiffness. Some products combine enzymes, including serrapeptase, nattokinase, and lipase. Enzymes are measured in FU (fibrinolytic units), the enzymes' ability to break down fibrin.

For general anti-inflammatory purposes, dose at 20,000–60,000 FU/d; for more chronic inflammation, dosages range from 120,000 to 240,000 FU/d. Start low and build up to avoid stomach upset. People who experience chronic pain and depression or fibromyalgia can begin a nutrient protocol with enzymes only as the first step.

Contraindications: Proteolytic enzymes and EFAs can act as blood thinners; hence, people on blood thinners may need to adjust their doses downward under the guidance of their health provider.

Pyrroloquinoline Quinone (PQQ)

PQQ is a micronutrient that improves mitochondrial function. It reduces inflammation based on C-reactive protein levels (Harris et al., 2013), acting as an antioxidant and anti-inflammatory, especially targeting energy production within the mitochondria. It improves fatigue, anxiety, and sleep (Nakano et al., 2009; Tamakoshi et al., 2023) and metabolic (Charrier et al., 2024) and cognitive function. PQQ and CoQ10 synergize with each other. CoQ10 facilitates ATP production, and PQQ promotes the creation of new mitochondria. PQQ is exceptionally high in parsley, green peppers, kiwi fruit, papaya, and tofu. The dose is 20 mg/d.

Contraindications: People with kidney or liver disease should consult their health provider before use.

S-Adenosyl-L-Methionine (SAM)

The body synthesizes SAM from the amino acid methionine. It is essential for methylation and synthesizing serotonin and dopamine, acting as an antidepressant. It has been well studied in clinical research and has excellent efficacy for depression. It has also been used to improve survival or delay liver transplantation in patients with alcoholic liver cirrhosis. Use with

cofactors: L-methylfolate, betaine, Vitamin B-6 (pyridoxal 5'-phosphate), and Vitamin B-12. Not everyone will benefit from SAM, especially over-methylators; therefore, before suggesting SAM, *MTHFR* status must be identified.

Contraindications: People with bipolar disorder should use SAM at much lower doses and with caution under the supervision of a health professional, as it could trigger mania. High doses can lead to some digestive distress. SAM use is contraindicated with antidepressant medication, dextromethorphan, meperidine (Demerol), and levodopa due to added serotonergic effects.

Uridine-5' Monophosphate (UMP)

UMP is the basic building block of RNA, DNA, and brain fats for healthy neuronal membrane function (Wurtman, 2014). It supports CDP choline and acetylcholine levels required for memory. It is found in beer. Combined with DHA, it has a synergistic beneficial effect on memory (Sakamoto et al., 2007) and is an antidepressant. It is usually part of cognitive support formulae containing several nutrients for brain function and memory.

Contraindications: Uridine may lower levels of Vitamin B-12, suggesting extra supplementation is beneficial.

Essential Fatty Acids

The generous use of essential fatty acids (EFAs), whether obtained from food or from supplements, is required for mental health. Like Vitamin D, there is a widespread deficiency of omega-3 fatty acids. EFAs support brain structure and synaptic communication and aid the treatment of depression and anxiety (Su et al., 2018; Liao et al., 2019). Docosahexaenoic acid (DHA), a constituent of fish oil, improves communication between synapses and increases dendritic spines on postsynaptic neurons; higher blood levels of fish oil are associated with increased brain volume (Pottala et al., 2014). Lewis et al. (2013) use up to 20 g fish oil daily (enteral feeding) to treat traumatic brain injury. Fish oil benefits people with depression, anxiety, bipolar psychotic disorders, ADHD, and dementia. *APOE4* carriers have lower levels and require higher doses of omega-3 supplementation.

The gamma linoleic acid (GLA) rich oils include borage, evening primrose, and black currant seed. Use borage oil as an anti-inflammatory for

depression and dermatological problems like acne and eczema. Use evening primrose for hormonal balance and bipolar disorder combined with fish oil and black currant for PMS, menstrual cramps, and cognition. Baseline dose is 2 g/d and can increase to 4 g for higher-risk individuals.

Table 7.5 describes medicinal fats and oils used in supplementation and their purpose and dose range.

TABLE 7.5
Medicinal Fats and Oils Used in Supplementation

Type	Fat/Oil	Benefits	Dose Range
Docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA)	Fish oil	Lowers blood pressure DHA supports learning, brain development and growth Anti-inflammatory Cognitive performance, memory, depression, PTSD, bipolar disorder, ADHD Can reduce psychotic symptoms For acute and chronic TBI	Dose range from 500 mg to 4 gms day based on blood testing For TBI: Up to 20 g o.d.
	Cod liver oil (optimal is fermented since it is cold extracted)	High in omega-3 fatty acids Supplies DHA, supporting brain, nervous system Anti-inflammatory Supports immune health Rich in Vitamins A, D	Children: 1 tsp o.d. (1,200 mcg / 4,000 IU of Vitamin A) Adults: 2 tsp o.d. Pregnant women: 3 tsp o.d.
Alpha-linolenic acid (ALA)	Cold-pressed flaxseed oil	Supplies nutrient-rich lignans Supports healthy cholesterol and blood glucose levels	Organic flax seed may be used in salad dressings or ground and added to smoothies

Type	Fat/Oil	Benefits	Dose Range
		May be harder to convert to omega-3	
Gamma-linolenic acid (GLA)	Blackcurrant seed oil	Relieves uterine cramping (PMS), Alzheimer's disease	1,000–1,500 mg o.d.
	Borage oil	Reduces inflammation, pain Improves nerve transmission Reduces depression	500–2,000 mg o.d.
	Evening primrose oil	Anti-inflammatory Relieves headaches Regulates hormones Boosts nerve transmission May benefit people with Alzheimer's, withdrawal from alcohol	500–3,000 mg o.d.

Amino Acids

Amino acids are the building blocks of proteins and precursors to neurotransmitters provided in good-quality proteins and supplements. The three main categories of amino acids are essential, nonessential, and conditional amino acids. *Nonessential amino acids* are those that the body can synthesize independently from other amino acids or metabolic processes, meaning they do not need to come from the diet. *Conditional amino acids* are typically nonessential but become essential under certain conditions, such as during stress, illness, or trauma. *Essential amino acids* are those that the body cannot synthesize on its own, so they must be obtained through diet or supplementation. Nonessential and conditional amino acids are often included in a broad-spectrum free-amino-acids formula, which is an ideal method of supplementation, followed by adding higher doses of specific amino acids.

Amino acid therapies serve as an alternative to psychotropic pharmaceutical medications. Pharmaceutical-grade amino acids may be compounded according to the individual's specific biochemical needs to provide the building blocks that support specific NT production and

neuronal communication. Table 7.6 lists essential, nonessential, and conditional amino acids and their uses.

TABLE 7.6
Essential, Nonessential, and Conditional Amino Acids

Amino Acid		Richest Food Sources	Benefits	Dose Range
Essential amino acids	L-histidine and cofactors	Bananas, buckwheat, cauliflower, cheese, corn, dairy, eggs, fish, kidney beans, meat, mushrooms, potatoes, rice, rye, soybeans, spirulina, tofu, wheat	Supports transmission of nerve messages from brain to organs Prevents nerve damage Strengthens the immune system Anti-inflammatory Reduces allergy symptoms Psychological distress can result from excess histidine	0.5 and 20 g o.d.
	L-isoleucine	Almonds, black beans, cashews, cheese, chicken, dairy, eggs, fish, lentils, liver, meat, pinto beans, soy protein isolate	Assists in muscle recovery Regulates blood sugar Regulates energy levels Depression, irritability, hypoglycemia Confusion may result from deficiency	0.5–1.5 g o.d.
	Leucine	Almonds, beans, beef, brown rice, chicken, chickpeas, corn, fish, lentils, milk, whey	Supports healthy muscle mass Improves cholesterol levels	2–3 g o.d. for muscle growth
Essential amino acids	L-lysine	Beans, brewer’s yeast,	Supports immune system	800 mg o.d.

Amino Acid		Richest Food Sources	Benefits	Dose Range
		cheese, dairy products, eggs, meat, nuts, spirulina	Increases calcium retention and absorption Maintains lean body mass Relaxation Balances hormonal stress response Deficiency may cause nausea, fatigue, dizziness, agitation, and slow growth	
	L-methionine	Almonds, beans, Brazil nuts, broccoli, chickpeas, eggs, fish, garlic, lentils, meat, oats, onions, pumpkin seeds, sesame seeds, yogurt	Supports detoxification Supports joint health Helps liver to process fats Lowers cholesterol levels Reduces histamine levels May help with schizophrenia	500–100 mg o.d. Always balance with glycine if supplementing
	D,L-phenylalanine	Anchovies, beef, bison, Swiss chard, cheese, chicken, chocolate, cod, cured ham, eggs fish, lamb, pork, poultry, sesame seeds, spinach, sunflower seeds, turkey, watermelon, yogurt	Improves mental energy levels Increases production of neurotransmitters, including epinephrine, norepinephrine, and dopamine Increases production of thyroid hormones May reduce depression Deficiency causes depression, impaired memory, reduced alertness, confusion, low	1,000 mg t.i.d.

Amino Acid		Richest Food Sources	Benefits	Dose Range
			energy, reduced appetite	
	L-threonine	Beans, cottage cheese, eggs, dairy, fish, grains, leafy greens, lentils, meat, mushrooms, nuts, sesame seeds, wheat	Fat metabolism, especially for fatty liver Improves intestinal health Improves indigestion Boosts immune system Improves depression Supports CNS function	1,000 mg o.d.
	L-tryptophan	Avocado, beef, black walnuts, cheese, chicken, chocolate, cod, cottage cheese, duck, eggs, fish, granola, lamb, nuts, oat bran, pork, pumpkin seeds, ricotta, sesame seeds, soy, tahini, tofu, turkey, wild game, yogurt	Required to produce serotonin and niacin Improves sleep by regulating the sleep-wake cycle Reduces stress Improves mood	500–1,500 mg o.d.[a,b] for OCD, insomnia, binge eating, and bulimia
Essential amino acids	L-valine	Bananas, beans, beef, broccoli, brown rice, cheese (esp. cottage cheese), eggs, fish, milk, oranges, potatoes, poultry, seaweed, sesame seeds	Supports liver and gallbladder health Improves sleep May benefit brain trauma Supports cognitive function Supports immune and nervous system health Stimulating Regulates blood sugar	2,000–4,000 mg o.d. When using branched-chain amino acids (BCAAs), dose in 2:1:1 ratio of leucine: isoleucine: valine

Amino Acid		Richest Food Sources	Benefits	Dose Range
			Supports muscle repair and growth Deficiency contributes to cognitive decline, insomnia, myelin sheath damage	
Nonessential amino acids	L-alanine	Avocado, beans, brewer's yeast, brown rice, corn, dairy, eggs, fish, legumes, meat, mushrooms, nuts, poultry, seeds, spirulina, watercress, whole grains	Supports CNS function Aids in the formation of neurotransmitters Provides energy for brain and CNS Supports immune system Regulates blood sugar	Beta-alanine is the form dosed, 2 g b.i.d.
	L-asparagine	Asparagus, beef, chicken, dairy, eggs, fish, soy, whole grains	Supports healthy immune system function Reduces fatigue Protects the liver Supports neuronal health and transmission of nerve signals Deficiency may cause depression and confusion	200 mg o.d.
	L-aspartate acid	Almonds, beef, eggs, flaxseeds, chickpeas, lentils, molasses, ricotta cheese, salmon, shrimp, walnuts	Supports hormone production Supports healthy nervous system function Promotes healthy metabolism Plays an important role in the production of ATP Increases cellular energy May reduce fatigue	200 mg o.d.

Amino Acid		Richest Food Sources	Benefits	Dose Range
			Detoxifying	
	L-glutamic acid	Beans, dairy, eggs, fish, leafy greens, kombu, lentils, meat, poultry	Metabolizing sugars and fats Utilized in the production of GABA Detoxifies ammonia from the brain Improves behavioral disorders Improves epilepsy	300 mg o.d.
Nonessential amino acids	Taurine	Meat, seafood	Reduces blood pressure Seizure prevention Supports glucose management Helps prevent and treat alcohol-related liver disease	500–1,000 t.i.d.
	L-theanine	Tea: green, white, black	Improves sleep quality, mood Can reverse liver damage caused by alcohol	200 mg b.i.d. for anxiety 400 mg at night for sleep
Conditional Amino Acids	L-arginine	Seeds: pumpkin, sesame; nuts: almonds walnuts; lentils, turkey, chicken, pork, salmon, eggs	Aids with hormone secretion Supports the immune system Stimulates the release of insulin Relaxes blood vessels by stimulating the release of nitric oxide Ammonia detoxification	100 mg/d
	L-cysteine	Port, turkey, chicken, beef, tuna, egg yolk	Detoxifying Supports gastrointestinal health	OCD and cocaine craving: NAC

Amino Acid		Richest Food Sources	Benefits	Dose Range
			Protects cells from radiation Assists with weight loss Protects brain and liver from damage	1,200–1,800–mg o.d.[c]
	L-glutamine	Beef, pork, turkey, eggs, yogurt, tofu, lentils, beans, cabbage, spinach	Precursor for the brain neurotransmitter glutamate Improves inflammatory bowel disease Use for intestinal permeability	For intestinal permeability: 5 g o.d.[d]
	Glycine	Gelatin powder, collagen peptides, bone broth, lentils, pumpkin seeds, sunflower seeds	Detoxification Calms the brain Promotes growth Supports deeper sleep Improves attention and memory Boosts immunity Used to treat schizophrenia	2–10 g/d[e] Acute panic: take 2 g[f] every few minutes until panic subsides
	L-ornithine	Beef, chicken, turkey, eggs, fish	Reduces physical fatigue Detoxifying Speeds physical recovery from injuries	500–1,000 mg/d (rarely supplemented alone)
	L-proline	Gelatin powder, collagen peptides, bone broth, chickpeas, oats	Supports collagen production; joint, tissue repair Regulates blood pressure May prevent arteriosclerosis	2,000 mg/d supplemented alone
Conditional Amino Acids	L-serine, D-serine	Almonds, asparagus, beef, cheese, chickpeas, dairy, flaxseeds,	Fat metabolism Tissue growth Supports immune system Tryptophan synthesis	500 mg/d– 3 g/d

Amino Acid		Richest Food Sources	Benefits	Dose Range
		lentils, meat, sesame seeds, soybeans, walnuts	Learning, memory, schizophrenia, NMDA receptors	
	L-tyrosine	Almonds, avocados, bananas, bison, cheese, chicken, dairy products, eggs, fish, mustard greens, pork, pumpkin seeds, salmon, sesame seeds, shrimp, spirulina, steel-cut oats, tuna, turkey, watercress, yogurt	Metabolism Precursor to the mood regulating neurotransmitters norepinephrine and dopamine Precursor to thyroid hormone, thyroxin Deficiency causes norepinephrine deficiency, depression Supports adrenal, thyroid, pituitary gland health Reduces stress, fatigue May improve depression, anxiety	Tobacco withdrawal: 500 mg b.i.d.[g]

[a]Take away from food.

[b]Take before bed.

[c]Dean et al. (2011).

[d]Combine with curcumin for gut function.

[e]Sublingually.

[f]Sublingually every few minutes (Prousky, 2005).

[g]Two weeks before the quit date and for at least 2 months following: 500 mg b.i.d. building up to 2,000 mg o.d.

Modes of Administration

When using amino acid supplements, it's crucial to follow the principle of using smaller doses of many nutritional supplements rather than high doses of only a few. Amino acids can be delivered via food proteins, capsules, powders, and IV therapy. It's important to take amino acids 30 minutes before meals to avoid competition with the amino acids in food. Dissolve

amino acids in water and drink upon rising or before bed. Children and adults with ADHD, hypoglycemia, and adrenal stress carry a dropper bottle of liquid amino acids and take 10–30 drops under the tongue during the day if energy, mood, or focus drops.

IV Amino Acid Therapy

IV therapy supplies high-dose amino acids, combined with vitamins and minerals therapy, for fatigue and chronic mental illness. This approach can be implemented during the initial stages of recovery from drug and alcohol abuse, during the transition off medications, during acute stress, or during obstacles to self-care that prevent oral administration of amino acid nutrients.

Free Amino Acid Therapy

The use of amino acid therapy is an essential component for mood regulation. People with mood lability, anxiety-focusing ADHD, and memory and cognitive concerns will all benefit from a free amino acid blend. Nearly everyone will benefit from a supplement with free amino acids as the foundation for neurotransmitter function. Begin by increasing all the amino acids in the form of free amino acids, thus preventing increasing one at the expense of another. Too often, people take 5-HTP alone or a GABA precursor, but adding amino acids at higher doses is most effective once a baseline of all the amino acids is established.

Contraindications: People with tardive dyskinesia should not take phenylalanine supplements, and kidney or liver disease patients should consult their primary care practitioner before taking high amounts of amino acids.

Individual Amino Acids

See Table 7.6 to review amino acids used for additional supplementation. Additional considerations for individual amino acids are discussed below.

N-acetylcysteine (NAC)

NAC, from the amino acid cysteine, is a precursor to the antioxidants glutathione and taurine and is an effective method to increase glutathione levels. NAC passes the blood-brain barrier, which ostensibly supports glutathione in the brain. Oral use of glutathione can be effective especially if liposomal. Adding glycine to NAC is even more effective. NAC reduces oxidative stress and helps with addictions, compulsive grooming disorders,

schizophrenia, and bipolar disorder (Xu et al., 2023; Bradlow et al., 2022). Individuals who take a significant amount of acetaminophen to manage pain should take 1,500 mg NAC daily.

L-Glutamine

L-glutamine is not an essential amino acid since the body makes it; however, under stress, the body may require additional glutamine. Glutamine improves energy; supports immune, brain, and digestive function; and is often included in compounds of vitamins and amino acids to restore gut function. Matthews et al. (2012) suggest adding high-dose glutamine to a TBI protocol.

Glycine

Glycine is my go-to amino acid for anxiety, insomnia, and withdrawal from psychotropics. It is an inhibitory amino acid that antagonizes norepinephrine. It is the amino acid of choice for use during acute panic. Glycine added to antipsychotic medication improves the negative symptoms of schizophrenia (Javitt et al., 2001) and reduces inflammation (Soh et al., 2024), with apparent benefits for longevity. Bone broth and collagen powders contain significant amounts of glycine. Dose ranges from 4 to 20 g each day. Take sublingual doses of 2 grams powder every few minutes for acute panic until symptoms subside (Prousky, 2005).

Contraindications: If using clozapine, do not take glycine except on the advice of a prescribing clinician.

Box 7.4

Recipe: Gladness Glycine Smoothie

This smoothie has many benefits. It reduces anxiety, panic attacks, chronic pain, and psychotropic withdrawal and aids sleep. If used near bedtime, omit the chocolate, which can be stimulating. Begin with 5 g and increase to 30 g daily to test tolerance. Pregnant or breastfeeding women and people with kidney disease should consult their clinician before using.

Makes 1–2 servings

Ingredients

- ½ teaspoon (2,400 mg) borage oil
- 1 teaspoon fish oil (1,000 mg DHA)
- 8 ounces hemp, coconut, or almond milk

2 tablespoons coconut cream or full-fat bovine cream

2 tablespoons organic cocoa powder

1 cup berry of choice (e.g., strawberries)

15–30 g glycine powder

Directions

Put ingredients in a blender. Add enough water and ice cubes to make either a thin drink or a thick frozen shake. Drink all at once or in a divided portion.

D,L-Phenylalanine

D,L-phenylalanine and tyrosine support dopamine and are used to increase energy and reduce fatigue and depression. D,L-phenylalanine converts to tyrosine and may be better absorbed. Use D,L-phenylalanine when pain co-occurs with depression for PMS (Giannini et al., 1989) and inattention and hyperactivity (Martins & Silva, 2023). Dose at 2–3,000 mg/d.

Taurine

Taurine is a conditionally essential amino acid and antioxidant that supports glucose management, lowers cholesterol, and reduces blood pressure (Jangra et al., 2024). It promotes neurological health and recovery from alcohol-related liver disease. It also aids bile salt formation.

L-Theanine

Theanine is an amino acid found in both green and black teas. L-theanine is a natural, nonsedating anxiolytic, often paired with 5-HTP for treatment of depression and anxiety. L-theanine promotes relaxation by crossing the blood-brain barrier. It is an analog of glutamine interacting with glutamate receptors stimulating the production of GABA. GABA helps shift brain waves from the stressed beta waves to the relaxed alpha waves. It also increases concentration, learning ability, and memory (Baba et al., 2021). Matcha tea has high levels of theanine which moderates the energizing effects of caffeine making it a “relaxing stimulant.” It increases relaxation via increasing alpha wave activity and enhances levels of brain-derived neurotrophic factor (BDNF), improving learning and memory (Baba et al., 2021). L-theanine is beneficial for the immune system and may reduce the side effects of chemotherapy. The dose ranges from 100 to 400 mg/d.

L-Tryptophan and L-5-Hydroxytryptophan (5-HTP)

Tryptophan is an essential amino acid that converts to 5-HTP, serotonin (5-hydroxytryptamine, or 5-HT), and melatonin. Tryptophan improves mood

and sleep and helps regulate stress. It may be used at night to aid sleep. 5-HTP is derived from the amino acid L-tryptophan. It crosses the blood-brain barrier and is then converted to serotonin. 5-HTP is a good choice for an additional amino acid supplement for depression, insomnia, anxiety, and intestinal problems. Start at a low dose of 25–50 mg and increase to 250 mg as needed, slowly to avoid nausea.

Use with synergistic cofactors, including Vitamin B-6 (pyridoxal 5'-phosphate, 50–100 mg), niacinamide (50 mg), and L-theanine (50 mg).

Contraindications: Tryptophan can aggravate asthma and should be avoided in heart disease, pregnancy, and in individuals with lupus (Prousky, 2007). Taking excessive doses of 5-HTP may lead to excess serotonin levels, a condition known as serotonin syndrome. This can also result from the combination of 5-HTP with serotonergic drugs like Prozac, Zoloft, MAOIs, SSRIs, weight-loss medications, and St. John's wort. However, as discussed in Chapter 8, 5-HTP is a viable alternative to reduce SSRIs. Those taking 5-HT receptor agonists (naratriptan, sumatriptan, zolmitriptan) should not take 5-HTP.

Tyrosine

Tyrosine is an energizing and mood-elevating amino acid that increases dopamine levels. It is used for low mood, pain, focus, and attention and for people withdrawing from dietary stimulants like coffee. Do not take it after 3 p.m., as it can be stimulating. If one becomes jittery, lower the dose. The dose range is 500–1000 mg b.i.d.

Contraindications: Do not take L-tyrosine or D,L-phenylalanine with Grave's disease, phenylketonuria, or melanoma.

Glandulars

Glandulars provide some of the most potent nutritional therapies available and should be part of every mental health nutritional protocol. Using glandulars is like refurbishing parts on your car because they have worn down or no longer function efficiently. Glands are the "replacement parts" that aid our organs and glands. Using fresh and dried animal glands as a nutritional and medical therapy has a long history (Isaacs, 2023).

Our ancestors and indigenous peoples who hunt for food today consider the glands among the animal's most prized and medicinal parts. Organ meats and glands are more nutritious than muscle meats, and until modern

practices started to eliminate access to these glands and organs, they were considered the most nutritious. Glands were part of the medical repertoire until synthetic hormones were developed, and we see vestiges of the use of glandulars today in medicine, such as porcine thyroid hormone or pancreas. Gourmands, “foodies,” and people who continue to follow their authentic diet traditions around the world relish these rare sources of nutrition. While glands and organs in the form of whole food are healthy, one cannot always obtain them nor eat a sufficient amount to provide medicinal benefits when ill; this is when dehydrated (lyophilized) glandulars and organs are required.

Glandular supplements are purified extracts from mammal organs, endocrine glands, and tissues. They are usually harvested from cattle, pigs, or lamb and freeze-dried. They contain large amounts of DNA and RNA from the cell’s nucleus. Glandular supplements help regenerate organs, glands, and tissues by targeting the same gland in humans through the action of peptides, minerals, lipids, and nutrients present in the glands themselves (Isaacs, 2023; Murray, 2020).

Glandulars are harvested from neonatal animals and are hormone-free as required by law; the adrenal glandular contains no cortisone, and the thyroid glandular contains no thyroid hormone. Glandular supplements are affordable and nontoxic (if taken from animals not treated with antibiotics and hormones). Glandulars can neutralize antigen-antibody reactions in gut permeability and celiac disease. Specific glandulars target the organ at risk, hence the use of dehydrated liver glandular for the person recovering from alcohol abuse; brain glandular for the shrinking of tissue in TBI, PTSD, dementia, and depression; hypothalamus and pituitary for chronic stress disorders; and thymus to support depressed immune function.

Table 7.7 describes how to use glandulars for mental well-being, and further considerations for specific glandulars are discussed below.

TABLE 7.7
Glandular Supplementation

Glandular	Benefits	Dose Range
Adrenal	Helps the body respond to stress Supports immune function Supports metabolism and physiological function of adrenal glands Addresses fatigue, sugar metabolism, and weight loss	100 mg b.i.d.[a] or 200 mg t.i.d.[a]

Glandular	Benefits	Dose Range
Adrenal cortex	Helps support a healthy stress response	250 mg o.d.
Brain	Supports HPA axis depression	250 mg t.i.d.
Hypothalamus	Supports HPA axis depression Very useful for the treatment of TBI	500 mg t.i.d.
Liver	Alcohol recovery	400 mg t.i.d.
Lung	For all lung-related health issues, including recovery from tobacco use	400 mg t.i.d.
Pancreas	Supports digestion May support and modulate the immune function May support blood glucose within normal limits Supports pancreatic function and fat digestion	425 mg t.i.d.
Pituitary	Supports HPA axis	250 mg b.i.d.
Thymus	Immune function	1,000 mg t.i.d.
Thyroid	Low thyroid function	40 mg t.i.d.

[a]Take before 4 p.m.

Brain

Brain glandular is beneficial for all mental health conditions, especially depression, cognitive decline, dementia, PTSD, and TBI. The brain glandular combines well with the hypothalamus and adrenal glandular. Thus, combining the adrenal glandular with the hypothalamus glandular is advisable to treat stress-related illnesses. Since the hypothalamus is involved in regulating dreams and sleep, using the hypothalamus glandular can increase vivid dreams, which can restimulate traumatic nightmares in sensitive individuals. In these cases, reduce the dosage if the dreams are intolerable.

Liver

As the major detoxifying organ of the body, almost everyone can benefit from liver glandular, but especially individuals with a history of

pharmaceutical or substance use, people in alcohol recovery, or those with chemical sensitivities.

Pancreas

The pancreas glandular is very useful for inflammation, detoxification, and digestion. When taken with food, it assists the digestive process; when taken away from food, it scavenges inflammatory cells and toxins in the body.

Pituitary

This specialized gland is essential to the endocrine system, which releases various hormones under the influence of the hypothalamus for cognitive function and in chronic stress.

Thymus

This powerful gland is in front of the heart behind the sternum and supports immune response. Cooked thymus is a culinary delicacy (also called sweetbreads).

Bioidentical Hormones

While not technically nutritional therapy, bioidentical hormone replacement therapy is, for many people, an essential element of a nutritional and lifestyle plan to improve mental well-being. Testosterone is available only via prescription. Low-dose estrogen and progesterone cream are available over the counter, but therapeutic levels often require a higher-dose, tailored prescription with a skilled hormone provider. Bioidentical hormone replacement therapy is beneficial for maintaining cognitive function in men and women. Estrogen deficiency in postmenopausal women reduces semantic memory. Adequate testosterone levels are antidepressant and improve cognitive ability in both men and women. Low levels of dehydroepiandrosterone (DHEA) in response to stress lead to cognitive decline in both men and women. Many studies demonstrate that progesterone is neuroprotective in TBI and brain injury (Wei & Xiao, 2013). It is also a sedative (Arafat et al., 1988; Söderpalm et al., 2004). Oral micronized progesterone in pre- and perimenopausal women is helpful at night to aid relaxation and sleep onset. Dose progesterone at 100–300 mg.

Mitochondria, Muscle, and Mood

Table 7.8 describes supplementation for mitochondria, muscle, and mood that involves a range of vitamins, amino acids, minerals, and bioidentical hormones.

TABLE 7.8
Mitochondria, Muscle, and Mood

Nutrient	Dietary Sources	Dose Ranges
Creatine	Beef, lamb, pork, fish, turkey, chicken	5 mg o.d.
Ribose	Animal proteins support ribose production	5–15 g o.d.
CoQ10	Organ meats (liver, heart, kidney), beef, pork, chicken	100–300 mg o.d.
Pyrroloquinoline quinone (PQQ)	Green peppers, kiwi fruit, natto (fermented soybeans), papaya, parsley, tofu	20 mg o.d.
Malic acid[a]	Apples and apple cider vinegar	1,200 mg b.i.d. (supplement)
Vitamin B-3	Asparagus, avocado, beef kidney, beef liver, beets, brewer's yeast, chicken, dairy products, eggs, sardines, sunflower seeds, tomatoes, tuna, turkey	500 mg b.i.d.
Vitamin B-12	Animal protein like red meat, beef liver, cod, dairy products (esp. yogurt), eggs, fish, salmon, sardines, shellfish (clams, shrimp, scallops), tuna	1–5 mg o.d.
L-Methylfolate	Asparagus, blueberries, brewer's yeast, broccoli, cabbage, cauliflower, eggs, kale, legumes, liver, peas, spinach, strawberries, sauerkraut, sweet peppers	1–15 g o.d.
Vitamin C	Bell peppers, broccoli, brussels sprouts, cantaloupe, cauliflower, citrus fruits, kiwi fruit, oranges, papaya, pineapple, potatoes, strawberries, tomatoes	1–5 g o.d.
Vitamin D-3	Beef, liver, cheese, egg yolks, fatty fish, fish liver oils, fortified foods (e.g., milk, breakfast cereals)	50–250 mcg (2,000–10,000 IU) o.d. depending on serum testing
Vitamin E	Almonds, asparagus, avocado, beet greens, mustard greens, peanuts, spinach,	300–600 mg o.d. (tocotrienols)

Nutrient	Dietary Sources	Dose Ranges
	sunflower seeds, Swiss chard, turnip greens, wheat germ	
L-acetyl- l-carnitine (ALCAR)	L-carnitine, the precursor, is found in animal proteins; beef, lamb, fish, pork, chicken	1,000 mg b.i.d. Empty stomach
N-acetylcysteine	Cysteine, the precursor, is found in egg yolk, pork, chicken breast, salmon, tuna	500 mg b.i.d.
Essential fatty acids	Black currant seed oil, borage oil, cod liver oil, evening primrose oil, fatty fish, fish oil, flax seeds, hemp, walnuts	2,000 mg o.d.
Magnesium threonate	Almonds, black beans, cashews, chia seeds, cereal, legumes, nuts, pumpkin seeds, spinach, whole grains	2,000 mg o.d. (200 mg, elemental magnesium)
Iron (heme vs. nonheme)	Liver, beef, lamb, lentils, chickpeas, spinach, Swiss chard	Beef liver supplement (10 mg o.d.)
Zinc picolinate	Alfalfa, beef, cashews, cheese, eggs, garbanzo beans, ginger, grains, lamb, lentils, miso, nuts, oysters, poultry, pumpkin seeds, quinoa, sea salt, sesame seeds, shrimp, sunflower seeds, turkey, walnut oil	50 mg o.d.
Testosterone[b]	Almonds, beef, cashews, chicken, eggs, fish, garlic, mackerel, nuts, onions, oysters, pomegranate, salmon, seeds, spinach, tofu, tuna	p.r.n.

[a]Fibromyalgia responds to mitochondrial support and benefits from combining malic acid and magnesium.

[b]Testosterone supports mitochondrial biogenesis and energy production, glucose and lipid metabolism, and is beneficial for cognitive function and mood disorders, including major depression (Giannos et al., 2023; Ide, 2023; Yan et al., 2021; Yin et al., 2023). Assess serum testosterone levels in women and men by age 40. Bioidentical hormones are warranted when treating mood and energy disorders and maintaining optimal health during aging.

Choosing Specific Protocols for Mental Health Clients

Appendix N offers detailed sample protocols for individual indications (e.g., depression, PTSD, or ADHD) that may be adjusted according to each client's needs (discussed in detail in Chapter 4). Each section in Appendix N lists core essential nutrients and additional nutrients that target specific

symptoms or deficits. These protocols include vitamins, minerals, amino acids, glandulars, and special nutrients comprising the core nutrients and the requisite co-factors that synergize their action. Adjunctive options are also provided to integrate into the protocol over time.

Chapter 7: Essential Next Steps for Micronutrients for Mental Health

- Educate your client about the role of nutritional supplementation in their well-being.
- Prioritize core nutrients for the client; identify what will come from supplements or foods (e.g., psychobiotics supplements, fresh and fermented foods).
- Provide gut healing nutrients for 4–6 weeks, if needed, before adding in additional supplements.
- Identify which supplements will benefit the client first and start at a low dose to gauge response.
- Review the assessment findings and match specific modes of ingestion, such as smoothies, capsules, liquids, or IV.
- Consider if a consultation with a prescribing clinician is necessary.
- Develop the core and adjunctive nutrient protocol.
- Consider drug/nutrient interactions as you consider protocol design; see the Drug–Nutrient Interactions section in the Resources at the back of the book.
- Identify obstacles or challenges to adherence (addressed in Chapter 9).

8

Pharmaceutical Medications

Side Effects, Deprescribing, and the Taper Process

Diet Essential: *Choose healthy foods and nutrients over alcohol and drugs to alter consciousness.*

Pharmaceutical medications alter consciousness, brain chemistry, and nutritional well-being. The theme of this chapter is summarized in the words of the pioneering physician and biochemist Carl Pfeiffer: “For every drug that benefits a patient, there is a natural substance that can achieve the same effect.” In this chapter, I describe the effects of medications on nutritional status and the side effects and dangers of psychotropic medications. I also provide strategies to deprescribe, taper, or reduce doses of psychotropic medications.

Psychotropic Medications

My clinical practice is devoted to helping people reduce and eliminate psychotropic and other medications that may have risk factors, untenable side effects, or limited efficacy. There is a growing deprescribing movement among clinicians and increasing demand from clients. I have successfully guided thousands of individuals in the withdrawal from pharmaceuticals. I am against the use of psychotropic medications in general for these reasons:

- They are more dangerous than helpful—the risks often outweigh the benefits.
- They are often ineffective—many do not provide consistent or reliable relief.
- They can lead to debilitating side effects, which can be worse than the original symptoms.
- Better and safer alternative treatments exist that provide effective relief with fewer risks.

There may be clinical reasons to prescribe short-term antipsychotics or sedatives for acute distress, but long-term benefits do not accrue and, indeed, increase health risks like metabolic syndrome (Mortimer et al., 2023). I review pharmacogenomic testing in Chapter 3, which I suggest before using psychotropic medication.

Critique of Psychotropic Medications

The emphasis on psychotropic medications for mental health is rooted in failed public health policies and funding. With community mental healthcare underfunded, limited insurance support for psychotherapy, and increased marketing of psychotropic drugs, medication became the default approach for treating mental health issues.

Among critics of psychotropic medications are Gøtzsche et al. (2015), Breggin (2013), Whitaker (2010), Kirsch et al. (2010, 2014), and Korn (2013, 2023a). While psychiatrists and primary care clinicians frequently prescribe psychotropic medications, clients routinely use other prescription and over-the-counter medications for digestion, pain, and other illnesses. Some of these medications are necessary, but many are not. All of these medications have significant interactive side effects. Pharmaceutical medication side effects

are directly responsible for more than 100,000 deaths each year in the United States (Vukadin, 2014), and specific medication classes like antidepressants, antipsychotics, and sedative-hypnotics increase overall mortality risk (C. C. Lin et al., 2023; J. Y. Lin et al., 2023; Vuolo et al., 2021), along with elevated risk of strokes and falls in older individuals (Bednarczyk et al., 2022). Why psychotropics are used so widely is less a result of need and efficacy and more a response to insurance companies' failure to pay for nonpharmaceutical interventions, plus pharmaceutical marketing and the "quick fix" mentality that is often instilled in the minds of patients who cannot afford therapy. The quick fix is also a point of view that is essential to deconstruct when working with clients who may bristle at the considerable self-care that is regularly required to restore physical and mental health, especially after years of medications.

The problem is multilevel: (1) pharmaceutical companies do not always reveal the results of negative studies, (2) marketing strategies downplay the side effects (Vukadin, 2014), and (3) marketing methods include incentives for prescribers and materials that obscure the side effects and dangers (Hadland et al., 2019). Added to these issues is the decreased time allowed for the clinician to treat complex problems, and advertising targeting consumers actively encourages them to request certain medications from their providers. Finally, many medical and graduate school instructors, clinicians, and agency administrators have been conditioned to think that medications are the answer and the go-to response for every symptom. However, focusing on connection, counseling, and exploring self-care with clients is always the first priority.

Attitudes and institutional impediments underlie in part the "whys" of psychotropic use more than treatment efficacy. Many people cannot afford psychotherapy, other forms of therapy, or good nutrition. Medications should not be the default response because social support, food security, and healthcare are inadequate.

Psychotropic Medications and Pregnancy

Despite increasing evidence that psychotropics have significant potential for deleterious effects on fetal development, prescribers continue to recommend medications. Women should be advised of the dangers of medicines during pregnancy. SSRIs and SNRIs have various teratogenic risks, including cardiac, kidney, urinary, digestive, musculoskeletal, and nervous system abnormalities, structures, and function (W. Huang et al., 2023). Studies on the effects of first- and second-generation antipsychotics and antidepressants on neurodevelopmental disorders have not found a causal effect (Z. Wang et al., 2024), though lithium and benzodiazepines are always contraindicated. The advice that, "if a mother on psychotropics is breast-feeding, the newborn should be systematically monitored for any possible adverse effects such as drowsiness, hypotonia, rigidity, tremor, and withdrawal symptoms" (Kohen, 2005) suggests the inherent risk in these medications that pass into breast milk despite limited research and findings to date.

Hormone Therapy for Transgender Health

People who identify as trans may choose to use hormone therapies and or surgical interventions to improve their mental well-being and quality of life. Addressing the nutritional needs resulting from hormone use will help clients thrive. Often, with the initiation of hormones, mood lability increases, or emotional states vary. Bioidentical estradiol, testosterone, and progesterone are increasingly available for coverage by insurance for trans individuals, and it is essential the clinician advocates for bioidentical hormone use instead of synthetic hormones. Gender-affirming surgeries include mastectomy, vaginoplasty, and phalloplasty, and clients benefit from optimal nutrition before and after surgery. Ensuring higher levels of protein will support wound healing and muscle repair. Zinc and Vitamins A, E, and C also play crucial roles in tissue repair and immune function. Topical salves for pain and relaxation may include arnica or cannabis. There are high rates of body dysmorphic disorder and eating disorders in transgender individuals. Combining optimal nutrition alongside bodywork and exercise, which reduce dissociation, improve body image, and lead to self-efficacy, is part of a holistic plan to enhance resilience and well-being. Based on current evidence, surgical interventions and hormone therapies, like puberty blockers, should be delayed until a child becomes an adult (Cass, 2024).

Transfeminine Individuals

Estrogen therapy, often combined with antiandrogens, can influence metabolism and body composition. Estrogen changes fat distribution, improves bone density, and can reduce muscle mass. Adequate protein and Vitamin D and K intake is critical to maintaining muscle and preventing osteoporosis. Avoid adding calcium supplements, as there is often enough circulating calcium but not enough Vitamins D and K. Supplement magnesium glycinate and assess for excessive phosphorus intake (usually from too many fast foods), which prevents calcium deposition.

Estrogen can increase the risk of blood clotting. Ensure optimal heart support with omega-3s (2,000 mg/d), CoQ10 (200 mg/d), and tocotrienols (300 mg/d) from annatto.

Transmasculine Individuals

Transmasculine individuals may use testosterone therapy and antiandrogens (testosterone blockers) that affect metabolism, muscle mass, and fat distribution. Testosterone can increase LDL cholesterol and reduce HDL. Incorporate additional fiber, plant proteins, and multicolored vegetables and fruits. Spironolactone, a potassium-sparing diuretic, is the most used testosterone blocker and can elevate potassium and reduce sodium. Testosterone blockers combined with estrogen decrease muscle mass. Optimize protein (up to 2 g/kg body weight) and resistance training.

Finally, hormone therapy can slow down gut motility. Additional fiber, hydration, herbal laxatives, coffee enemas, and belly massage are all simple interventions to adjust to these changes.

Deprescribing

Deprescribing psychotropics is a systematic collaborative process of reducing or withdrawing from medications. Deprescribing is particularly important for children and adolescents due to the risk to health and limited evidence for the use of drugs in children, and it is also essential in older adults due to the increased risk of adverse effects and drug interactions associated with polypharmacy.

Deprescribing is also an essential process because individuals are often placed on medications for years without review or adjustment of prescribed medications by general health practitioners and not specialists. Usually, people are prescribed multiple medications, which may stop working and/or cause side effects like loss of libido, weight gain, metabolic syndrome, and insomnia. Over time, medications can just stop working and become unnecessary. By helping patients off unnecessary medications, you can significantly improve their well-being.

Benefits of Deprescribing

- Misdiagnosis often drives and maintains medication use.
- Stopping unnecessary medications can decrease the risk of adverse drug reactions, side effects, and drug interactions.
- Lack of prescriber knowledge about deprescribing or tapering methods keeps individuals on medications that may be harmful or lead to side effects.
- Reducing medications can improve overall well-being, including better physical and mental health.
- Fewer medications can lead to better adherence to essential medications, and clients are less overwhelmed by complex protocols.

Deprescribing and Tapering

Deprescribing and tapering are related but distinct processes in the withdrawal from psychotropic medications. Tapering is a component of deprescribing, especially for medications with a risk of withdrawal symptoms or discontinuation syndromes.

Tapering refers specifically to the gradual reduction of a medication dosage over time. Tapering is adjusted to the client’s physical and emotional needs based on shared decision-making, including how long they have been using the medication, their current symptoms, their degree of self-care and social support, and other medication use.

Readiness to Taper

People can successfully withdraw from all kinds of medications and drugs, but not everyone will choose to do so, and it is essential to understand this when working with clients. The approaches outlined in this chapter will not be suitable for everyone. Not everyone is willing to use or can afford practical alternatives. Individuals with a psychotic disorder require care and help from others to apply these methods. Successful withdrawal often takes time and "taper coaches." Applying the information in this chapter (and the previous ones) will ensure people receive the proper nutrition and care during acute withdrawal. People are often fearful of eliminating medications, mistaking the discomfort of withdrawal for the return of original symptoms. Withdrawal and personal maintenance are feasible, notwithstanding these obstacles.

To withdraw and eliminate psychotropics, one benefits from using nutrient-dense foods and nutritional supplements to ease the withdrawal and nourish the brain and body. This chapter advances the discussion of protocols defined in Chapter 7 and detailed in Appendix N by identifying practical approaches while liberating oneself from the use of toxic drugs. While many people successfully withdraw from psychotropics without good nutrition, my approach ensures a more accessible and enduring approach to living medication-free.

Foods, nutrients, herbs, and exercise ease tapering by reducing neurotransmitter receptor hypersensitivity. For example, when tapering antipsychotics, dopamine hypersensitivity can lead to a rebound effect leading the client and support team to erroneously think the symptoms are returning. Hypersensitivity occurs in response to antipsychotic medications in which the receptors increase in number or become hypersensitive and can persist after withdrawal. A thoughtful, individualized plan addresses this hypersensitivity and the needs of the individual.

Finally, clients need to believe that they can withdraw and stay off psychotropic medications, and to do so, they require the support of a clinician who also thinks this is possible. Clinicians, clients, and their families and friends benefit when they decondition from the consensus trance. Clinicians, many of whom are also taking psychotropics, need to process their fears about psychotropic withdrawal and drug-free maintenance.

Readiness to Taper Checklist

Appendix M provides a checklist to use with your client to review their readiness to taper psychotropic medications and guidance for any additional preparation needed to ensure a successful taper.

Essential Strategies for Tapering and Withdrawal

Mindset Preparation for Client and Clinician

An essential part of the tapering and withdrawal process is recognizing that many people are conditioned to believe that taking medication is necessary and the only option for biochemical problems they have been told they have. Often, they are told that their depression is due to low serotonin and antidepressants will increase it and resolve depression. There is no scientific evidence for this theory (Moncrieff et al., 2023), which was intensively promoted in 1988, the same year when fluoxetine was introduced. People adhere to what Tart (2017) calls the "consensus trance" or social dissociation, when it comes to pharmaceutical use. While we often treat clinical dissociation associated with traumatic events and substance use, people may also experience social dissociation when it comes to medication use; they usually do not question it when recommended, or they actively seek it in response to social media, advertising, or peer pressure. This same type of disconnection occurs regarding diet, and the dissociation from how and what one eats affects one's mental and physical well-being and consciousness. While not easily changed, like any conditioned response, understanding these forces provides the basis for engaging the client in the questioning process. Another level of brainwashing occurs, according to Breggin (2013), who suggests that once people have been on psychotropics for some time, they experience medication spellbinding as a result of chronic brain impairment that results from chronic use of psychiatric medications. Breggin (2013) suggests that people on psychotropics lose the ability to recognize symptoms of their own impairment or drug intoxication. Hoffer (2008) also referred to "tranquilizer psychosis" among people prescribed antipsychotics. Below I address a comprehensive approach to successful withdrawal.

Elements Essential to Psychotropic and Medication Tapering

- Psychoeducation
- Develop a self-care plan
- Foundational nutrient protocol for tapering
- Engage prescribing clinician
- Develop a taper schedule
- Comprehensive nutrient protocol for tapering
- Clinician availability contract
- Taper team
- Therapeutic supports
- Sleep regulation
- At-home detoxification methods

Psychoeducation

I spend time during each session reviewing with the client their decision to taper, providing support and hope, and exploring fears, concerns, and potential obstacles, including the opinions of family members, friends, or others. The readiness checklist provides prompts for this conversation. I review the side effects they may be experiencing or are known to occur with the medication, the process of tapering, and what to expect over what period.

Developing a Self-Care Plan

Clients enter a tapering program at different stages; they may come to therapy with a goal to taper or decide to taper after working with you for a while and have experience in nutritional self-care for mental health. Some clients want to taper off one medication they have used for 6–12 months. More often, they have been taking more than one medication for years. Their stage and status will define how you proceed. In general, however, I require that the client consistently engages in a robust self-care plan for 4–12 weeks or more to prepare for tapering. Unless the client has a consistent plan of self-care in place, withdrawal, and maintenance are unlikely to be successful. The self-care plan includes good-quality food, a tailored nutritional protocol outlined in the previous chapter, daily exercise, and other therapeutic supports like a taper team of friends and family, acupuncture, and massage.

Foundational Nutrient Protocol for Tapering

An initial foundational protocol can include 2,000 mg omega-3 fatty acids and a natural B complex with Vitamins B-12, 1–10 g L-methylfolate, and 100 mg B-6 (pyridoxal-5'-phosphate). As a taper plan is developed, additional vitamins, minerals, amino acids, and glandulars can be added to support brain function, stress management, sleep and reduce inflammation and oxidative stress. Skill building to tolerate emotional or physical discomfort is also essential.

Prescribing Clinician

The client and I discuss their preference in initiating the taper plan. We consider whether they wish to discuss the taper plan with the prescriber, or if they prefer that I do, or perhaps the three of us meet. Their involvement in this decision-making process is crucial and empowers them in their healthcare journey.

If I meet with the prescriber, I discuss the client's health status and readiness to taper and review the current taper plan. I engage the prescriber's recommendations and suggestions. Most important, we want the prescriber to assent to the plan as they are responsible for medication. It is essential to be clear about what we request from the prescriber, including prescribing compounded or liquid medications, at lower doses as needed. Often, though not always, a prescriber is unaware of or hostile to integrative and nutritional interventions, which may pose a roadblock. Significant research demonstrates that clients are often unhappy with prescriber attitudes about tapering; they want more discussion about tapering, and they find prescribers unwilling to discuss the topic (Koomen et al., 2022). In one study, 71% of respondents found their doctors' advice unhelpful, with 57% identified as "very unhelpful" regarding stopping an antidepressant. Among their complaints were that the prescriber recommended a taper that was too fast, was not well educated on withdrawal symptoms, or denied the effects of withdrawal symptoms (Read et al., 2023). Prescribers,

especially nonpsychiatric prescribers, have less information about psychotropics, and most physicians receive less than 25 hours of nutrition training (Adams et al., 2010).

Suppose the prescriber does not agree to support the taper process. In that case, the client and I want to know why they will not cooperate. It is essential to understand why they are against the proposed process, and it may be beneficial to conduct a team conference call or meeting. They may benefit from more education, nutrition research articles and books, and learning more about the hyperbolic tapering approach. If, following a discussion of these approaches, the prescriber still does not wish to join the taper team, identify a new provider before beginning the taper who is engaged and supportive. I work with a team of prescribing professionals medical doctor (MD), advanced registered nurse practitioner (ARNP), naturopathic doctor (ND), and a compounding pharmacist (RPh).

Developing a Taper Schedule

The client and I (and other team members) fill out a taper calendar that includes the timeline for tapering off the medication. I ask the client to fill out their taper team list (Korn, 2023b), and we review it together to define the people and types of therapeutic support, what they provide, and at what specific intervals. This can be integrated into a notebook, digital, or cloud-shared calendar.

The withdrawal schedule will be designed based on the following:

- The “half-life” of the specific medication or drug
- How many different drugs the client is taking and which drug is prioritized
- How many months/years the client has been using the medication(s)
- What the client and clinician identify as optimal and achievable
- Stress levels in the client’s life, including acute perturbations
- Social supports that are in place to carry out the plan

As a general rule, the longer one has been on a drug, the longer it takes to withdraw. Rarely does the pace of withdrawal go evenly, however. I suggest clients reduce the dose slowly by milligrams or micrograms per milliliter, depending on the medication, and then stabilize at that level for at least 1–2 weeks. I have worked with many individuals who reduce their medication by half and then stay there for a month or more. Some people reduce Prozac by 35 mg and remain on 5 mg for a year. The complexity of withdrawal includes the mindset of the individual, their fears (and the client’s family’s fear), and concerns about the return of symptoms. People who have been labeled and medicated for years need time to change their identity and beliefs along with their biochemistry during this process.

Hyperbolic Tapering

Hyperbolic tapering is a practical approach to deprescribing as a slow tapering process. Hyperbolic tapering reduces the dosage of a drug following a hyperbolic curve. This approach minimizes withdrawal symptoms and other adverse effects associated with discontinuing the medication. The method involves a progressively smaller reduction in dose as the tapering process continues to avoid abrupt changes that could trigger withdrawal symptoms (Horowitz & Taylor, 2019; van Os & Groot, 2023) and appears to be one of the most effective methods (Eserian et al., 2023). Horowitz et al. (2021) suggest using hyperbolic tapering to individual tolerance when tapering antipsychotics. The goal is to gradually reduce D-2 blockade so that dose reductions become smaller and smaller in size as the total dose decreases (Horowitz et al., 2021). For example, quetiapine (Seroquel) is commonly prescribed for people with PTSD as a secondary medication for sleep. It becomes very challenging for people to withdraw from Seroquel and establish nonmedicated healthy sleep patterns.

Which Medication to Taper First

The priority of tapering multiple medications will depend on several factors. You might decide to taper one medication entirely before the next, or you may choose to reduce doses of two or more as you proceed. Some questions to consider include:

- Is one medication causing more side effects?
- Has a medication stopped working or providing perceived benefits?

- Will one medication help you cope better with the effects of tapering another medication? For example, one medication may be more sedating and aid sleep. Most, though not all, antidepressants and drugs for ADHD tend to be stimulating, whereas antipsychotics and benzodiazepines are sedating. Often, a second medication is prescribed to offset the effects of the first or a third to amplify the results not gained by the second.

Compounded Medicine and Taper Strips as Aids

Compounded medicines are prescription medicines tailored to a patient's specific needs. They are helpful during the taper process because they can be compounded in different strengths and doses. They can be made without the usual fillers and additives that commercial brands offer and that many people have allergic responses to, and for tapering medications, they can be provided in liquid or flavored form, making them easier to take or tolerate. Taper strips (see the Resources section at the back of the book) contain prepackaged doses that decrease in strength over time. This allows for a controlled and gradual reduction in the medication dose. Taper strips can be customized to fit an individual's needs.

Wilma's story in Box 8.1 helps us understand the process of tapering off medication.

Box 8.1
Wilma's Story: Tapering Off Medication

Wilma was a 36-year-old single professional who had been on 40 mg Prozac daily for depression, and 75 mg Trazodone to help with sleep, for 7 years. She wanted to withdraw from these medications. She felt the side effects of weight gain and diminished libido, and she was unsure of the current benefit. She also wanted to try to become pregnant. We had worked together in counseling for depression and bulimia for 12 months, and she said that she felt ready to withdraw and use some alternatives. In our work together, we reviewed Wilma's self-care program of exercise; healthy mineral-rich proteins, fats, and nongrain carbohydrates; and a supplementary protocol of omega-3 EFAs, B-complex with L-methylfolate, magnesium, and calcium. I suggested that she add 20 mg lithium orotate to support her mood, and free amino acids, which would provide 100 mg a day of 5-HTP. As she began to decrease the Prozac, she could increase the amino acids and lactium as needed. Because she took 75 mg Trazodone to help her sleep, in part due to the stimulation caused by Prozac, we agreed that she would reduce the trazodone last and reduce the Prozac by 3–4 mg a month or 1 mg a week. We then developed a schedule to reduce the Trazodone dose by 5 mg a night and supplement it with 500 mg L-tryptophan, 450 mg lactium (milk biopeptides), and 300 mg magnesium threonate at night. There were some nights she also used a concentrated, encapsulated lavender oil called Silexan and other nights when she used valerian, hops, and passionflower tablets. At three months, she felt stable and wanted to reduce the medications more quickly, so she increased the reduction to 5 mg a month. While we had initially planned a hyperbolic taper, she did not experience significant withdrawal symptoms, and after 9 months she had withdrawn from all her medications. We then turned our attention to supporting her mental health and well-being as she prepared for pregnancy.

Comprehensive Nutrient Protocol for Tapering

Develop a protocol using foundational vitamins, minerals, essential fatty acids, and amino acids and supplement it with additional nutrients and herbs one at a time. Because our clients are sensitive and may be intolerant of or respond well to subclinical doses, begin with low doses of individual nutrients, one at a time, slowly adding each new supplement. Prepare people for the amount of nutrients they may require, emphasizing that these natural substances work more gently than pharmaceuticals and work over time. Coordinate with your client the best delivery system: capsules, liquids, powders, extracts, or gummies.

Clinician Availability Contract

When developing the taper plan, it is essential to define clinician availability. For example, if there is more than one clinician on the team, each team member, therapist, prescriber, or peer support health coach can define their availability, the best contact method, and the expected response time. Unlike traditional psychotherapeutic boundaries, which often caution against outside-of-appointment contact, the therapist must be available to field questions and concerns during the initial withdrawal period or as the client requires. Suppose the clinician is unable or unwilling to be available, as in crisis availability. In that case, someone else may be assigned this role, or the clinician should evaluate if they wish to support a tapering process that could, though not necessarily, lead to crisis moments.

Taper Team

Identifying the client's social support is essential. Hold a meeting in person or via conference call to educate everyone about the process and to engage their support for participating in specific tasks. Withdrawing from psychotropics should be undertaken much like any drug addiction. There may be intensive stages requiring

full-time care and then support for relapse prevention and care. If the individual lives alone, someone must always be with them during the acute phase. Or, if the individual can move in with a friend or family member during the first intensive weeks, this may be ideal. While we focus on nutritional support, the support of friends, family, and health providers is essential; mental illness involves disrupted attachment either as a primary or secondary outcome. Providing support for attachment behaviors during this time is crucial to success.

Therapeutic Interventions

Therapeutic interventions aid the withdrawal process and can be instituted during preparation and intensified as needed. Create a spa-like atmosphere of self-care both in the home and outside, including aromatherapy, reflexology, and community acupuncture. Community acupuncture and the NADA protocol (Stuyt et al., 2018), founded by Michael Smith, MD, can be beneficial when delivered in a large room devoted to treating numerous people in various stages of detoxification who help each other by their presence. The client should consider taking time off or reducing their workload during the initial withdrawal phase, especially if they work outside the home.

Sleep Regulation

Most people on psychotropics have disrupted circadian rhythm. Regulating sleep behaviors should be part of the taper plan. Cranial electrical stimulation can also aid sleep and support withdrawal, as does acupuncture and gentle rocking. I will teach taper team members, especially partners, how to rock clients to sleep or when anxious. Many people also have disrupted glucose handling (hypoglycemia or hyperglycemia). For reactive hypoglycemia, eat nut butter, cheese, or an egg and crackers to help stabilize blood glucose levels and sleep through the night. Upon awakening in the middle of the night, another dose of lactium can be administered. Morning light exposure, vigorous exercise, or yoga during the day, and blue-light-blocking glasses before bed can help reset the circadian rhythm along with nutrients defined in the previous chapter. Box 8.2 describes strategies for insomnia that synergize the nutrient protocol.

Box 8.2
Strategies for Insomnia and Sleep Disorders When Withdrawing from Medications and Drugs

- Cognitive behavioral therapy (CBT) for insomnia
- Electroencephalography biofeedback, neurofeedback
- Cranial electrostimulation
- Bright light therapy before 10 a.m.
- Exercise before 4 p.m.
- 3 ounces of food before sleep (combine protein, carbs, and fats)
- Magnesium sulfate bath 30 minutes before bed
- Room should be dark with no light source; use eye masks (see sleep resources in the Resources section at the back of the book)
- Blue-light-blocking glasses at night 1–2 hrs before sleep
- Weighted blanket
- Regulate ambient bedroom temperature to between 60°F and 67°F adjusted to personal need/preference

Box 8.3
Integrating CBT and ACT for Insomnia

Cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT) complement nutritional and lifestyle approaches to tapering, particularly in addressing insomnia. Often, patients are prescribed medications that manage sleep distress without addressing their root causes. Psychotherapy that uncovers psychological root causes combines well with nutrition and CBT and ACT to manage symptoms, providing an integrative approach to adherence and recovery.

A foundational step in preparing for withdrawal and tapering is addressing the conditions that initially led to medication reliance. Insomnia plays a central role in mental distress, either as a co-occurring symptom or as a side effect of treatment. Anxiety, depression, OCD, bipolar disorder, ADHD, and PTSD frequently feature both insomnia and anxiety.

Medications such as benzodiazepines, Z-drugs (e.g., Zolpidem), quetiapine (Seroquel), and gabapentin are commonly prescribed to address sleep disturbances, whether primary or secondary to the use of SSRIs, SNRIs, NDRIs, and stimulants, all of which are known to disrupt sleep. Defining the primary and secondary causes of sleep disturbances before tapering informs the order and priority of medication withdrawal.

CBT for insomnia is particularly effective in supporting the stressors of tapering and improving sleep. Goals may include the following:

- Educating clients about sleep, circadian rhythms, and sleep hygiene
- Reinforcing sleep cues and using sleep restriction therapy
- Reducing anxiety about sleep through cognitive restructuring
- Incorporating relaxation techniques such as mindfulness, guided imagery, rocking, and the 4–7–8 breathing technique (see Box 4.1)

CBT also supports recovery maintenance (relapse) strategies by recognizing early signs of sleep disturbances, managing setbacks, and sustaining progress over time. Where necessary, 24-hour sleep deprivation therapy, under clinical guidance, can be utilized to reset circadian rhythms, boost neurotransmitter function, and integrate effectively with light therapy. Additionally, paradoxical intention, used selectively within CBT, can address ambivalence often uncovered during motivational interviewing. For example, clients might express such fears as, "I'll never be able to get off these medications" or "My doctor said I'd always need them." Therapists might explore pausing the tapering process at these moments, saying, "Perhaps this isn't the right time to continue tapering. Would you like to stabilize for now?" This approach can serve as a form of paradoxical intention, offering a strategic way to manage ambivalence or fear, or it may signal a genuine need to reassess the tapering plan.

Over time, such beliefs can be addressed using cognitive reframing and ACT, fostering self-compassion and reinforcing the values that guide the recovery process (Chapoutot et al., 2021). Expanding into ACT brings additional focus on self-compassion and acceptance of one's current stage of recovery. ACT helps clients define and reinforce the values that drive their resolve during the tapering process, fostering a belief in the possibility of change. These values are emotional and spiritual anchors during challenging moments, and clients can revisit them with the taper team for support. Integrating ACT with CBT provides actionable strategies tailored to the client's acute and long-term needs, enhancing emotional resilience, while nutritional and lifestyle interventions strengthen biological resilience.

At-Home Detoxification Methods

There are two interrelated processes in detoxification, also known as biotransformation. The first is eliminating and reducing exposure to harmful or toxic substances in food or the environment. The second is to engage actively in specific activities that support the transformation and excretion of toxic waste through the body's many organs, with particular attention to Phase 2 detoxification in the liver. The use of glycine and N-acetylcysteine (NAC) and the addition of sulfur-rich foods to the diet, like garlic and onions, aid Phase 2 detoxification. SSRIs, SNRIs, antipsychotics, mood stabilizers, and stimulants all undergo glucuronidation as they biotransform. Benzodiazepines like lorazepam (Ativan), oxazepam (Serax), and temazepam (Restoril) undergo extensive glucuronidation as they are biotransformed. Supplementation with calcium-D-glucarate (500 mg/d), cruciferous vegetables, citrus fruits, apples, berries, turmeric, and rosemary aids glucuronidation. Conversely, valproic acid, chloramphenicol, aspirin, acetaminophen, ibuprofen, and naproxen can all inhibit glucuronidation.

Methods that support the elimination of toxins from the body will ease the physical and emotional burden of withdrawal. While these methods will help with all medications, as well as drugs and alcohol, they may not be powerful enough to support, for example, opiate withdrawal alone, and should be considered adjunctive. These methods should be started before the withdrawal start date and continued as part of daily or weekly routines to restore health.

Detoxification Strategies

There are many natural approaches to eliminating toxins from the body and improving the function of the major organs of elimination: the skin, liver, kidney, and colon. Integrating these methods will ease discomfort from circulating waste and aid in relaxation and sleep. These methods also have the added benefit of contributing to self-care rituals and decreasing dissociation. Among the detoxification methods I recommend for use at home and that I have written about extensively elsewhere (Korn, 2013, 2023a) are as follows:

- Coffee enemas
- Dry skin brushing
- Liver flush
- Fiber flush
- Magnesium sulfate (Epsom salt) baths
- Vinegar baths
- Sauna and sweat baths
- Acupuncture/acupressure

- Castor oil packs

The Use of Nutrition and Diet During Taper and Withdrawal

The application of diet and supplementation begins before withdrawal and intensifies at each stage, according to the ability of the client and the support team. Because psychotropic medications target the NT system, Table 8.1 identifies the most beneficial NT precursors found in foods, nutrients, and herbs to use as psychotropic medications are withdrawn. NT precursors, like amino acids, are the building blocks of neurotransmitters, which transmit signals across a synapse from one neuron to another and generally have immediate and specific effects on synaptic transmission. Neuromodulators modulate the activity of neurons with a more diffuse and longer-lasting impact on neural function. Amino acid supplements are best absorbed when taken away from food. Also, refer to the protocols provided in Chapter 7.

TABLE 8.1
Neurotransmitters, Neuromodulators, and Their Precursors

Neurotransmitter	Pharmaceutical Compounds	Amino Acids/ Nutrients	Botanicals	Foods	Entheogens/Psychedelics
GABA	Benzos Barbiturates Anticonvulsants	Glutamine, taurine, milk-derived neuropeptides, lithium orotate, magnesium, B-6	Valerian, hops, skullcap, green tea, kava, passionflower, chamomile	Walnuts, oats, spinach, beans, liver, mackerel, meat, fish, dairy, eggs, nuts, seeds, whole grains, leafy greens, poultry, potatoes, bananas, chickpeas	Fly agaric (*Amanita muscaria*) is a GABA(A) receptor agonist
Serotonin	SSRIs, SNRIs, TCAs, MAOIs, atypicals	Tryptophan, 5-HTP, B vitamins, esp. B-12, B-6, niacinamide, folic acid	St. John's wort, saffron, *Griffonia*	Salmon, beef, lamb, turkey, chicken, eggs, cheese, nuts, seeds, tofu, figs, bananas, root vegetables, brown rice, fish, potatoes, chickpeas, flaxseeds, chia seeds, walnuts	LSD, psilocybin, N,N-dimethyltryptamine (DMT), ibogaine, ayahuasca, mescaline
Dopamine	NDRIs, MAOIs, stimulants	Tyrosine, D,L-phenylalanine, B-12, B-6, iron	Ginseng, fenugreek, mucuna, rhodiola, ginkgo	Coffee, tea, eggs, pork, dark chocolate, ricotta cheese, soy products, red meat, fish, dairy, red meat, poultry, lentils, spinach,	3,4-methylenedioxymethamphetamine (MDMA)/ 3,4-methylenedioxyethamphetamine (MDE), mescaline, LSD

Neurotransmitter	Pharmaceutical Compounds	Amino Acids/ Nutrients	Botanicals	Foods	Entheogens/Psychedelics
				potatoes, bananas, chickpeas, flaxseeds, chia seeds, walnuts	
Norepinephrine	SNRIs, TCAs, MAOIs, NDRIs	Tyrosine	St. John's wort, holy basil, rhodiola, ginseng licorice	Meat, fish, cheese, soy products, eggs, dairy, red meat, poultry, lentils, spinach, potatoes, bananas, chickpeas	3,4-methylen edioxymetham-phetamine (MDMA)/ 3,4-methylenedioxyethamphetamine (MDE), mescaline
Acetylcholine	Anticholinergics, cholinesterase inhibitors	GPC choline, phosphatidylserine, acetyl-L-carnitine, huperzine-A	Sage, bacopa, melissa, ginkgo, ashwagandha, huperzine	Eggs, liver, salmon, shrimp, nut butters, coffee, soybeans, fish, nuts	Scopolamine (contraindicated), datura, atropa belladonna
Glutamate	NMDA receptor antagonists, mood stabilizers	Glutamic acid, zinc	Gotu kola, kava, passionflower, green tea, ginseng, ginkgo	Caffeine, fermented foods, chicken, shellfish, eggs, dairy, meat, fish, beans, seeds, nuts	Ketamine, ibogaine, phencyclidine (PCP)
Endogenous opioids/endorphins	SSRIs, SNRIs, TCA, lithium, atypical antipsychotics, buprenorphine	Milk biopeptides	Poppy, turmeric, ginseng, peppermint, ashwagandha	Casein (milk), gluten (grains), spinach, fat, fasting, dark chocolate	Ibogaine, *Salvia divinorum*
Endocannabinoids	Cannabidiol (CBD), Sativex	Fish oil, lactobacilli, Vitamins D, and E, magnesium, palmitoylethanolamide (PEA)	Cannabis, hops, echinacea, turmeric	Fatty fish, hemp seeds/hemp oil, raw nuts, cocoa, seeds, plant polyphenols, peas, egg yolk	Psilocybin, LSD, and MDMA may have indirect effects on the endocannabinoid system
Nitric oxide	Nitroglycerin, sildenafil (Viagra), tadalafil (Cialis), and vardenafil (Levitra)	Folate, L-arginine, L-citrulline, Vitamins C, and E	Ginseng, garlic, ginger, hawthorn	Beet root, beet greens, Velvet deer antler, spinach, arugula, celery	Psilocybin, LSD, N,N-dimethyltryptamine DMT, MDMA

Elements of a Successful Process: Before the Start

- Establish self-care guidelines that incorporate whole foods that are enjoyable, low in anti-inflammatories, rich in protein, and include healthy fats and complex carbohydrates. Limit or eliminate refined sugar but include foods that can stimulate (coffee, chocolate) and sedate (chamomile

tea, oatmeal, cherries). People may engage their support team to prepare food, cook together, or order pre-prepped from food delivery companies.
- Eliminate gluten and casein or other food intolerances, including food additives.
- Initiate the foundational taper nutrient plan described above.
- If digestion is a significant problem, consider IV vitamin therapy twice a week, including Meyer's cocktail of Vitamin C and/or phosphatidylcholine.
- As desired, initiate daily skin brushing, hot/cold showers, and/or twice-weekly sauna baths.
- Walk or exercise 45 minutes, a minimum of five days a week.
- Establish the taper schedule and obtain compounded doses or taper strips if required.
- Begin the taper schedule appropriate for the specific medication.
- When the taper begins, intensify the nutrient protocol to include specific amino acids targeting the appropriate receptors that the medication targets. Adjust doses upward to address mood and sleep concerns.
- Continue psychotherapeutic support to process the emotional ups and downs of the withdrawal process.
- Stabilize physically and emotionally at each new dosage level before reducing further.
- Employ detoxification strategies at home.

Pharmaceuticals for Mental Health: Effects on Nutritional Status

Whether one uses or withdraws from psychotropics, they, along with most pharmaceuticals, affect nutritional status by creating nutrient deficits or metabolic imbalances. People who take medications are more likely to have nutritional deficits and side effects. This, in turn, worsens physical and mental health problems.

These effects suggest the following prevention and treatment strategies:

- Identify the effects of the pharmaceutical on nutrient status.
- Supplement with the identified vitamins, minerals, or other nutrients to counteract the effects of the pharmaceutical.
- Work with an integrative medicine clinician to find an alternative to the pharmaceutical or to reduce the dose and eliminate it over time.

In addition to the nutritional effects of pharmaceuticals used for psychotropics, drugs used for medical conditions also produce side effects. Likewise, some pharmaceuticals can affect the sense of smell, which can affect food intake, leading to nutritional deficits.

Medications and drugs affect nutrition in two ways. The primary effect occurs when the medication or drug interacts with the nutritional behaviors of the client, leading to poor dietary habits, such as failure to eat, overeating, or overeating the wrong food. Medications that cause nausea or are stimulants are among these, and opiate use frequently leads to excessive sugar consumption. The second type of effect is the metabolic response to a drug, leading to secondary impacts such as nutrient deficits. For example, statins deplete CoQ10, which is essential for mitochondrial function. This occurs because the same enzyme that statins inhibit to reduce cholesterol is responsible for the production of CoQ10. Both primary and secondary malnutrition should be considered when evaluating nutritional and mental health status. I discuss the major categories of psychotropics and their effects on nutrient status next.

During the assessment process, the clinician reviews all substances the client is using. Before designing a supplement program, conduct a drug-nutrient-herb interaction analysis. I suggestion a searchable database in the Resources section at the back of the book.

Antipsychotics for Bipolar Disorder

Examples

These include aripiprazole (Abilify, Aripiprex), asenapine (Saphris, Sycrest), chlorpromazine (Thorazine), olanzapine (Zyprexa, Zypadhera, and Lanzek), quetiapine (Seroquel), risperidone (Risperdal), and ziprasidone (Geodon, Zeldox, and Zipwell).

Effects on Nutritional Status

Bipolar disorder and schizophrenia are metabolic disorders. Antipsychotics appear to exacerbate glucose management, which is already a challenge in these disorders. People taking risperidone and other atypical antipsychotics are at a greater risk for developing hyperglycemia and diabetes (Carli et al., 2021; Leyse-Wallace, 2008), as well as weight gain and depression of sexual function. They also reduce the B vitamins, in particular B-2. Dry mouth may be an additional side effect.

Antidepressants

Monoamine Oxidase Inhibitors (MAOIs)

Examples

These include tranylcypromine sulfate (Parnate), phenelzine sulfate (Nardil), and isocarboxazid (Marplan).

Effects on Nutritional Status

MAOIs can cause Vitamin B-6 deficiency. Avoid tyramine-rich foods such as aged cheeses, cured meats, fermented foods, red wine, and beer. Eating these can cause a serious spike in blood pressure and require emergency treatment.

Tricyclic Antidepressants

Examples

These include clomipramine hydrochloride (Anafranil), amitriptyline hydrochloride (Elavil), desipramine hydrochloride (Norpramin, Pertofrane, etc.), nortriptyline hydrochloride (Pamelor), doxepin hydrochloride (Sinequan), trimipramine maleate (Surmontil), and imipramine (Tofranil).

Effects on Nutritional Status

Amitriptyline reduces riboflavin, sodium, and CoQ10.

Selective Serotonin Reuptake Inhibitors (SSRIs)

Examples

Citalopram hydrobromide (Celexa), escitalopram oxalate (Lexapro), fluvoxamine maleate (Luvox), paroxetine hydrochloride (Paxil), fluoxetine hydrochloride (Prozac), sertraline hydrochloride (Zoloft), venlafaxine (Effexor), venlafaxine extended release (Effexor XR), and duloxetine (Cymbalta).

Effects on Nutritional Status

Associated with suicidality and aggression (children and teens more susceptible); decreases calcium/Vitamin D; deficiencies in betaine, folate/folic acid, and Vitamin B-12.

Serotonin and Norepinephrine Reuptake Inhibitors (SNRIs)

Examples

Desvenlafaxine (Pristiq), duloxetine (Cymbalta), levomilnacipran (Fetzima), milnacipran (Ixel, Savella), and venlafaxine (Effexor).

Effects on Nutritional Status

Can increase blood pressure levels; duloxetine may worsen liver problems.

PTSD With Depression Medications

Examples

These include nortriptyline (Aventyl or Pamelor), amitriptyline (Elavil), doxepin (Sinequan or Adapin), and clomipramine (Anafranil).

Effects on Nutritional Status

Amitriptyline reduces riboflavin, sodium, and CoQ10.

Other Antidepressant Medications

Examples

These include mirtazapine (Remeron), and trazodone (Desyrel); bupropion (Wellbutrin) and Zyban (used for smoking cessation); vortioxetine (Trintellix), ketamine, and esketamine (Spravato) for treatment-resistant depression (administered intranasally). Ketamine is used as an anesthetic and can also be administered off-label—either via IV or intramuscular injection for treatment-resistant depression, or as an infusion for chronic pain management. Esketamine is delivered as a nasal spray and is approved for treatment-resistant depression and major depressive disorder with acute suicidal ideation.

Effects on Nutritional Status

Trazodone can deplete Vitamin B-2 and selenium. It can affect appetite by either increasing it or decreasing it. GI upset can alter nutrient status including low sodium levels. Bupropion can cause appetite suppression, insomnia, dry mouth, headache, nausea, and agitation, tremors, and an increased risk of seizures. Vortioxetine can lead to nausea diarrhea, dizziness, headache, insomnia, or mild sexual dysfunction. Both ketamine and esketamine can produce similar side effects due to their impact on the central nervous system. Ketamine may cause dissociative experiences, dizziness, sedation, nausea, and at higher doses even hallucinations or blurred vision. Similarly, esketamine, which is delivered as a nasal spray, can also lead to dissociation, dizziness, and nausea, along with headaches and nasal irritation. Both medications can elevate blood pressure and heart rate.

General Antidepressant Effects

Weight gain and depression of libido and sexual function are common side effects of most psychotropic medications, including antidepressants, mood stabilizers, and antipsychotic drugs (Ruetsch et al., 2005). People who take SSRIs for long periods may have deficiencies in betaine, folate/folic acid, and Vitamin B-12 (Kharrazian, 2013). Long-term use of antidepressants can permanently desensitize postsynaptic neurons (Kharrazian, 2013). These medications reduce metabolic rate and alter both appetite and cravings (for sweet foods). They also increase blood alkalinity, which ironically can exacerbate depression and anxiety. This may account for why some people do worse than others on these medications. Suicidality and aggression are also associated with SSRIs; children and teens are more susceptible to suicidality (Breggin, 2013). Antidepressant drugs may increase the risk of developing *Clostridium difficile* infection (Rogers et al., 2013).

Use of antidepressant medications is widespread and used for many other symptoms, including pain, premenstrual syndrome disorder, and eating disorders. The benefits and risks of side effects remain controversial, with several researchers concluding that the effects of SSRIs that are observed for the treatment of depression are based on placebo response (Kirsch, 2010) and that long-term efficacy has not been established. Breggin (2013) suggests that long-term studies of every class of psychiatric drugs show no proof of effectiveness. Kirsch et al. (2008) found that both patients receiving a placebo and an antidepressant improved, and the difference among those using the antidepressant was below the level of significance.

A meta-analysis of the benefits of antidepressant medications compared with placebo shows the beneficial effects are minimal to nonexistent for patients with mild or moderate symptoms and have substantial benefits for patients with very severe depression (Fournier et al., 2010). The most extensive study conducted on antidepressants, the Sequenced Treatment Alternatives to Relieve Depression, showed only 2.7% of patients had a remission lasting more than 12 months (Breggin, 2013). Another study showed that the risk of relapse is greater for those taking medication once they stop than for those who take no medication. The return of the depression leaves patients in a cycle in which they need to continue taking antidepressants (Breggin, 2013). The use of antidepressants in older people also carries an increased vulnerability and risk of suicide and mortality (Chai et al., 2022; Crumpacker, 2008; Maslej et al., 2017), which contrasts with literature suggesting that antidepressants reduce the risk of suicide in older individuals.

Barbiturates, Benzodiazepines, and Opiates

Barbiturates

Examples

These include amobarbital sodium (Amytal Sodium), enobarbital (Nembutal), secobarbital sodium (Seconal Sodium Pulvules), butabarbital sodium (Butisol), and mephobarbital (Mebaral).

Effects on Nutritional Status

Barbiturates deplete biotin, folic acid, and Vitamins D and K. Barbiturates have been largely replaced by benzodiazepines but are still used for some treatment of migraines.

Benzodiazepines

Examples

These include clonazepam (Klonopin, Rivotril), diazepam (Valium), estazolam (Prosom), flunitrazepam (Rohypnol), lorazepam (Ativan), midazolam (Versed), nitrazepam (Mogadon), oxazepam (Serax), triazolam (Halcion), temazepam (Restoril, Normison, Planum, Tenox, and Temaze), chlordiazepoxide (Librium), and alprazolam (Xanax).

Effects on Nutritional Status

Benzodiazepines deplete melatonin levels, calcium, biotin, folic acid, and Vitamins D and K.

Benzodiazepines target the GABA receptors and are used for anxiety. Benzodiazepines increase the risk of developing mood and substance use disorders (Sun et al., 2024) falling and fractures in older women, while withdrawal from them decreases the risk of falling (Salonoja et al., 2012). Long-term use is associated with cognitive impairment in visuospatial ability, speed of processing, and verbal learning. They exacerbate nightmares and deep sleep. They should only be used for very short-term acute treatment, if at all. Withdrawal must be very slow (with the exception of triazolam [Halcion]) and is aided by switching from short-acting to long-acting benzodiazepines. Benzodiazepine and related Z-drug use are also associated with serious infection and immune dysfunction (X. Wang et al., 2024).

GABA-acting nutrients for anxiety provide effective alternatives to benzodiazepines and other sedatives and hypnotics for sleep—in particular, 5-HTP or tryptophan and milk biopeptides. Nutrients targeting the GABA receptors are most beneficial, along with substituting Kava, an effective botanical anxiolytic (Korn, 2013, 2023a). Ashton (2002) is a leading expert on benzodiazepine withdrawal and provides comprehensive withdrawal schedules for each specific drug type. For people who are also taking antidepressants, withdraw from the benzodiazepine first. Prousky (2005) suggests the use of melatonin (1 mg) to promote sleep and niacinamide (400 mg 4–6 times a day) up to a total of 1,500–2,500 mg/d divided throughout the day.

Limit grapefruit and citrus consumption; caffeine may cause excitability, nervousness, and hyperactivity and lessen the antianxiety effects of the drugs. Use caution with sedative herbal products (chamomile, kava) or stimulants (caffeine, guarana, or mate).

Opioids

Examples

These include codeine (codeine sulfate); oxycodone hydrochloride and ibuprofen (Combunox); oxycodone and acetaminophen (Endocet); oxycodone and acetaminophen (Percocet); aspirin, oxycodone hydrochloride, and oxycodone terephthalate (Percodan); oxycodone hydrochloride (Roxicodone); methadone (Dolophine, Methadose); and propoxyphene (Darvon, Darvocet-N).

The term “opioid” refers to all opioids and opiates including natural opioids called endorphins; opium-derived alkaloids like morphine and codeine; semisynthetic opioids such as heroin, oxycodone, hydrocodone, and buprenorphine; and synthetic opioids like methadone. Heroin is also an opioid. Opiates impair digestive function, and prolonged use impairs the body’s capacity to reduce pain. People addicted to opiates (or on methadone treatment) are at risk for increased sugar intake (Mysels & Sullivan, 2010), leading to obesity, hypoglycemia, and diabetes.

Effects on Nutritional Status

Opiate use is associated with increased sugar intake and B-vitamin deficits.

Strategies for Withdrawal

It takes 7–10 days for many opiates to leave the system, though some longer-acting drugs require 30–40 days. Substitute less dangerous alternatives for opiates. Deaths due to opiate use were reduced by 25% in states that provide medical cannabis for the treatment of pain (Bachhuber et al., 2014). Some current approaches include hybrid inpatient/outpatient programs using naltrexone detoxification over 3–5 days. Naltrexone can cause liver damage and digestive problems. Research demonstrates that cannabis users adhere to their naltrexone treatment better than nonusers, and there are a variety of studies demonstrating cannabis may serve as an “exit drug” out of opiate addiction.

Stimulants for the Treatment of ADHD

General Concerns

Children with attention and focus challenges are already starting out with nutritional deficits, such as zinc, omega-3 fatty acids, and often B vitamins. Stimulants can contribute to poor appetite.

Short-Acting (Immediate-Release) Forms

Examples

These include dextroamphetamine sulfate (Dextrostat, ProCentra, Dexedrine) and methylphenidate (Ritalin, Methylin, Wellbutrin IR).

Effects on Nutritional Status

Loss of appetite, weight loss, sleep problems, irritability, tics, and stomachache; methylphenidate should not be used if one has glaucoma or is taking an MAOI.

Intermediate-Acting Forms

Examples

These include amphetamine and dextroamphetamine (Adderall), dextroamphetamine sulfate (Dexedrine Spansule), methylphenidate hydrochloride (Metadate ER), and extended-release methylphenidate (Methylin ER, Ritalin SR).

Effects on Nutritional Status

Loss of appetite, weight loss, sleep problems, irritability, and tics.

Long-Acting Forms

Examples

These include amphetamine and dextroamphetamine (Adderall XR), methylphenidate (Concerta), methylphenidate (Daytrana), methylphenidate hydrochloride (Metadate CD, Ritalin LA, Quillivant XR), and lisdexamfetamine dimesylate (Vyvanse).

Effects on Nutritional Status

Loss of appetite, weight loss, sleep problems, irritability, and tics; lisdexamfetamine dimesylate causes dry mouth.

Mood Stabilizers

Anticonvulsants That Act as Mood Stabilizers

Examples

These include carbamazepine (Tegretol), divalproex (Epival), lamotrigine (Lamictal), gabapentin (Neurontin), and topiramate (Topamax). Carbamazepine (Tegretol) is an anticonvulsant used instead of lithium for irritability, aggressiveness, mania, and mixed states.

Effects on Nutritional Status

Carbamazepine depletes Vitamin D, biotin, calcium, and folic acid.

Mood Stabilizers for Bipolar Disorder

Examples

These include lithium (Eskalith, Lithobid) and valproic acid/valproate (Depakene, Depacon, Stavzor, Depakote).

Effects on Nutritional Status

The combination of mood stabilizers and antipsychotics causes more weight gain. Lithium inhibits the production of inositol, and valproic acid causes deficits of the amino acid carnitine, which can lead to liver problems. It also leads to folate/folic acid, Vitamins D and E, and selenium deficits. Long-term usage of valproic acid/valproate can result in Vitamin D deficiency.

Commonly Used Medications: Effects on Nutritional Status

Antibiotics

Examples

General classes include macrolides, sulfonamides, fluoroquinolones, and cephalosporins. Specific examples include gentamicin (Garamycin, Gentak), neomycin (Neo-Fradin), penicillin (Permapen), and tetracycline (Diabecline, Acnecycline, Diabetex, Tetra-abc). Rifaximin (Xifaxan) is commonly prescribed for SIBO.

Effects on Nutritional Status

The significant effects of antibiotics are on the healthy gut flora because they kill all bacteria in the gut. This leads to digestive problems, poor absorption of nutrients, and the potential for antibiotic resistance. Even when one does not use antibiotics orally in the form of pharmaceuticals, there are antibiotics in commercial animal feed production (80% of all antibiotics used in the United States). Antibiotic-resistant bacteria are the result. This suggests that one should avoid mass-produced animal products inoculated with antibiotics unless necessary or if there is no alternative.

When antibiotics have been consumed, reinoculate the gut with probiotic-rich foods and supplemental bacteria. Antibiotic use leads to deficiencies in folate, Vitamins B-1, B-2, B-6, and B-12, calcium, magnesium, potassium, and Vitamin K. The tetracyclines particularly can deplete the B vitamins and Vitamin K, affecting the absorption of minerals such as calcium and magnesium.

Fluoroquinolones are among the most dangerous antibiotics. These medications should be used only as a last resort and never in children under the age of 18. These medications include ciprofloxacin (Cipro), levofloxacin (Levaquin), gemifloxacin (Factive), moxifloxacin (Avelox), norfloxacin (Noroxin), and ofloxacin (Floxin). These antibiotics are associated with side effects that include psychosis, suicidality, anxiety, and physical illnesses, including permanent peripheral neuropathy (Cohen, 2001).

Alternatives

There are certainly medical necessities for the use of antibiotics. However, they are often prescribed when other options might also be effective and would also avoid the side effects. Among these are chronic childhood ear infections, colds or flu, and urinary tract infections, especially in older individuals. Barring emergencies, consider the use of garlic and onions, which are rich in sulfur (see Section H.6 in Appendix H for Onion-Garlic Soup recipe), and oil of oregano; all have mild antibiotic properties.

Antifungals

The most common antifungals include fluconazole, terbinafine hydrochloride, and itraconazole.

Fluconazole (Diflucan) is used to treat systemic and mucosal *Candida* infections. These infections can occur in response to mucosal exposure, antibiotic over use, and excessive sugar intake use for 4 months. They can lead to hepatotoxicity and drug resistance and can affect nutrient absorption and Vitamin D metabolism.

Terbinafine hydrochloride (Lamisil) is used to treat nail fungus infections. Use for longer than 3 months increases risk of liver injury and can affect appetite, taste perception, and impair absorption of Vitamins A, D, E, and K.

Itraconazole (Sporanox) is prescribed for systemic fungal infections and nail fungus. Use for longer than 3 months may cause gastrointestinal distress, liver enzyme elevation, and affect Vitamin D and other nutrients metabolized by CYP3A4 enzymes.

Alternatives

Antifungal medications should always be prescribed by a healthcare provider to avoid potential side effects and complications from excessive over-the-counter self-prescribing. Non-pharmaceutical alternatives should be considered first. Evidence supports the use of pharmaceutical-grade dimethyl sulfoxide (DMSO)—a solvent known for enhancing penetration—as an adjunct with antifungal essential oils or topical treatments. Proper evaluation and professional oversight are necessary to determine the safest and most effective treatment for fungal infections.

Anticonvulsants

Examples

These include pregabalin (Lyrica), gabapentin (Neurotin), phenytoin (Dilatin), carbamazepine (Carbatrol, Epitol, Equetro, Tegretol, Tegretol XR), valproate (Depacon, Depakene, Depakote, and Eliaxim), lamotrigine (Lamictal), oxcarbazepine (Trileptal), and topiramate (Topamax).

General Concerns

Feelings of tiredness, upset stomach, dizziness, or blurred vision (during the first few weeks). Psychologically, cognitive problems are associated with thinking, remembering, paying attention or concentrating, and finding the right words. Socially, anticonvulsants are associated with isolation, dependent behavior, low rates of marriage, unemployment, and reduced quality of life.

Effects on Nutritional Status

Anticonvulsants are used to control seizures and as psychiatric medications. Over time, these medications can deplete Vitamin D, calcium, Vitamin B-12, Vitamin K, copper, selenium, and zinc. Chronic use can lower immunity, exacerbate depression, and cause muscle weakness.

Alternatives

Fish oil, B vitamins, and ketogenic and grain-free diets are widely used. Before changing medication for seizure control, consultation with an integrative neurologist is essential. Cannabis, especially cannabidiol (CBD), is beneficial in decreasing the frequency of seizures in children with treatment-resistant epilepsy (Ben-Zeev, 2020; Huntsman et al., 2020).

Anti-inflammatories

Examples

Nonsteroidal anti-inflammatory drugs (NSAIDs) include aspirin, ibuprofen (Advil, Genpril, IBU, Midol, Motrin, Nuprin), diclofenac, (Cataflam, Voltaren), and naproxen (Aleve, Midol Extended Relief, Naprelan 375, Naprosyn).

Effects on Nutritional Status

NSAIDs can be dangerous, mainly when used over the long term or in high doses acutely. NSAIDs contribute to depression and interfere with antidepressant efficacy. NSAIDs are also associated with damaging joint cartilage and gut and kidney damage.

NSAIDs deplete folic acid, B-6, and B-12, Vitamin C, calcium, and magnesium. They also increase the need for Vitamins C and K, and folate. NSAIDs should be employed only after reading contraindications and as an emergency response to acute pain that cannot be managed otherwise. NSAIDs are often used to manage chronic pain, and an alternative, integrative approach to pain management can be very successful (Korn, 2013, 2023a).

For localized pain compounding, pharmacists can formulate topical creams or gels that contain very effective compounds. These might include a cream containing ketoprofen (an NSAID), ketamine, and capsaicin for neurological pain. Because it is applied topically, the NSAID does not become systemic and thus does not cause the types of side effects that oral use causes. Nevertheless, it is designed as a powerful intervention for short-term use. Fibromyalgia creams containing capsaicin at a higher dose are also available.

Alternatives

Integrated nutrition for pain management includes proteolytic enzymes, amino acids (D,L-phenylalanine) to support analgesia, Vitamin D, natural herbal cyclooxygenase-II enzyme inhibitors (COX-2 inhibitors), lipoxygenase (LOX-inhibitors), omega-3, and GLA oil.

Blood Pressure Medications/Antihypertensives

Examples

These include methyldopa (Aldomet), ramipril (Altace), verapamil (Calan), doxazosin (Cardura), benazepril (Lotensin), and enalapril (Vasotec). Angiotensin II receptor blockers include losartan (Cozaar), valsartan (Diovan), irbesartan (Avapro), candesartan (Atacand), and telmisartan (Micardis). The beta-blockers include atenolol (Tenormin), metoprolol (Lopressor, Toprol-XL), propranolol (Inderal), carvedilol (Coreg), and bisoprolol (Zebeta).

General Concerns

Some over-the-counter medications, including decongestants, may raise blood pressure or interfere with the effectiveness of some prescribed blood pressure medications. Some beta-blockers, like propranolol, can

increase the risk of depression, lethargy, and sleep disturbances. Propranolol is often used for anxiety in the treatment of PTSD, though it can have the opposite effect.

Effects on Nutritional Status

Methyldopa can cause Vitamin B-12 deficiency and lead to excess dietary sodium (salt) intake, resulting in fluid retention and interference with blood pressure, thus lowering its action. Using potassium supplements or eating high-potassium foods (including noni juice) while on ramipril can cause life-threatening problems; ramipril can cause zinc depletion; verapamil and losartan can cause zinc depletion and constipation (fiber is recommended). Angiotensin II receptor blockers can affect taste and potassium and sodium levels. When taking beta-blockers, increase CoQ10, magnesium, and zinc and conduct regular tests of these nutrient levels.

Calcium Channel Blockers

Examples

These include amlodipine (Norvasc), nifedipine (Procardia), verapamil (Calan, Verelan, Covera-HS), and diltiazem (Cardizem, Dilt-cd).

General Concerns

Constipation, dizziness, fast heartbeat (palpitations), fatigue, flushing, headache, nausea, rash, swelling in the feet and lower legs. Avoid grapefruit products while taking certain calcium channel blockers (they interact with the drug and can affect heart rate and blood pressure). Some of the drugs that are likely to interact with this medication are other high blood pressure medications (including angiotensin-converting enzyme [ACE] inhibitors or beta blockers), diuretics, some eye medications, large amounts of Vitamin D or calcium supplements, drugs used to treat arrhythmia, drugs that contain cortisone, and any corticosteroids.

Effects on Nutritional Status

Among these medications, ACE inhibitors deplete zinc, calcium channel blockers deplete potassium, and the beta-blockers deplete CoQ10. Propranolol (Inderal) and atenolol (Tenormin) are also used for social anxiety and can lead to CoQ10 and choline deficits.

Alternatives

Potassium—and flavanol-rich foods are useful for blood pressure. Fish oil has been shown to reduce blood pressure. Use together with garlic, taurine, magnesium, and CoQ10 at 100 mg b.i.d.

Corticosteroid Medications

Examples

These include hydrocortisone (Solu-cortef, Locoid, Cortef, Anucort-HC, Cortifoam, Pandel, Proctocort, Westcort, Colocort, Hytone, Ala-Cort, Caldecort, Texacort, Procto-Kit, Theracort, MiCort-HC, CortAlo, A-Hydrocort, U-Cort, Poli-A, Maximum-H), cortisone, and prednisone (Deltasone, Rayos, Sterapred).

Effects on Nutritional Status

Cortisone, hydrocortisone, and prednisone are used in inhalers to treat inflammatory conditions, asthma, and autoimmune diseases. Dose and duration of therapy are the most critical independent, influential factors for adverse effects such as glucocorticoids-induced osteoporosis, steroid-induced myopathy, osteonecrosis, and dose-dependent increase in fasting glucose levels. Short-term use can reduce symptoms of inflammation and pain but also carry significant mood-altering side effects such as euphoria and hypomania (Warrington & Bostwick, 2006). Corticosteroids can induce anxiety and insomnia associated with the use of inhalers for the treatment of allergies and asthma. Clients should be monitored for mood changes or elevated anxiety soon after beginning steroidal treatment. Corticosteroids can decrease potassium, calcium, zinc, selenium, Vitamins D and K, and folic acid, and can cause sodium retention and increase blood pressure.

Alternatives

Corticosteroids are available in both natural and synthetic forms. Because the adrenals are the most important organs in managing inflammatory processes, chronic inflammation and pain are often signs of adrenal insufficiency due to chronic stress. Supporting adrenal function through food and nutrients is central to prevention and recovery. Animal proteins, sea salt, adrenal glandulars, phosphatidylserine, curcumin,

proteolytic enzymes, and licorice root are a few of the first options. For acute and chronic musculoskeletal pain, treatment with prolotherapy, stem cells, platelet-rich plasma (PRP), and hyaluronic acid injections should be investigated.

Naturopathic physicians also work with compounding pharmacists to provide low-dose physiologic cortisol (5–25 mg/d) for short-term use. A compounding pharmacist can help formulate an alternative to synthetic steroids. The other options for steroid use follow.

Dermatological Treatments

Acne

Example

Isotretinoin (Accutane).

Effects on Nutritional Status

Vitamin A metabolism interference (avoid Vitamin A supplements); can cause elevated liver enzymes and triglycerides, increased sensitivity to sunlight, mood swings, depression, and birth defects (if used during pregnancy).

Oral Contraceptives for Female Acne

Examples

These include norethindrone acetate/ethinyl estradiol (Estrostep), drospirenone/ethinyl estradiol (Yaz), and norgestimate/ethinyl estradiol (Ortho Tri-Cyclen).

Effects on Nutritional Status

Some may affect magnesium and Vitamin B-6 levels. Weight changes, mood swings, nausea, headaches, and increased risk of blood clots. Sometimes mood stabilization but also risk of mood swings and depression.

Eczema

Examples

These include topical corticosteroids, topical calcineurin inhibitors, topical PDE4 inhibitors.

Effects on Nutritional Status

May deplete calcium, potassium, and Vitamin D with long-term use. Prolonged use may affect mood, causing irritability, mood swings, and sleep disturbances.

Psoriasis

Example

Methotrexate.

Effects on Nutritional Status

Folate depletion, nausea, liver toxicity, bone marrow suppression, fatigue, and increased risk of infections; can cause fatigue, mood changes, depression.

Alternatives

Many skin problems respond to dairy elimination and food allergies. Depending on the skin problem, topical treatment options are available. These include aloe vera, tea tree oil, calendula cream, comfrey salve, coconut oil, and neem oil. Licorice root gel is available for shingles (herpes zoster).

Allergies/Asthma Treatments

Decongestants

Examples

These include pseudoephedrine (Sudafed, Suphedrine, Wal-Phed, SudoGest) and phenylephrine (Dimetapp Cold Drops, Nasop, Nasop12, Sudafed PE, Sudafed PE Children’s Nasal Decongestant, Sudogest PE).

Effects on Nutritional Status

May increase blood pressure, restlessness, insomnia, headache, dizziness. Appetite suppression is possible with pseudoephedrine. Decongestants should not be combined with MAOIs as they can raise blood

pressure. Herbs containing tannins may interfere with the absorption of ephedrine or pseudoephedrine taken by mouth.

Alternatives

Xylitol (XClear); try nasal irrigation with saline solution once or twice daily, using a neti pot or squeeze bottle, before using drops or inhalants.

Leukotriene Receptor Antagonists

Example

Montelukast (Singulair).

Effects on Nutritional Status

Potential gastrointestinal issues could lead to decreased nutrient absorption; headache, mood changes, abdominal pain, fatigue.

Inhaled Corticosteroids

Examples

These include fluticasone (Flovent), budesonide (Pulmicort), and beclomethasone (QVAR).

Effects on Nutritional Status

Risk of calcium and Vitamin D depletion over long-term use due to corticosteroid-induced bone loss. Increased risk of blood sugar elevation, leading to changes in carbohydrate metabolism. Hoarseness, oral thrush (fungal infection), coughing, increased risk of infections.

Oral Corticosteroids

Examples

These include prednisone and methylprednisolone.

Effects on Nutritional Status

Decreased calcium and Vitamin D levels, contributing to bone density loss, increased risk of potassium loss and sodium retention. Potential elevation of blood glucose, affecting carbohydrate metabolism. Weight gain due to increased appetite and changes in fat distribution, mood swings, high blood pressure, osteoporosis.

Beta-Agonists

Examples

These include albuterol (ProAir, Ventolin) and salmeterol (Serevent).

Effects on Nutritional Status

Increased potassium excretion, which could lead to hypokalemia (low potassium levels). Potential dehydration due to increased urination (especially with high doses). Tremors, nervousness, rapid heart rate, headaches.

Identify food allergies/sensitivities, especially gluten, dairy, and mucus-forming foods. Increase magnesium, omega-3 fatty acids, and borage (GLA) oil. Acidify pH by using 40 drops of orthophosphoric acid in 2 ounces of water daily for 40 days. Acidify diet and use hydrotherapy: Apply ice packs daily for 15 minutes between the shoulder blades.

Other Medications

Antiviral Medications

Examples

These include azidothymidine (AZT), zidovudine (Retrovir), acyclovir (Zovirax, Sitavig, Acyclovir, Herpex, Zoral, Xovir, Imavir), amantadine and interferons (Roferon A, Multiferon, Avonex, Cinnovex, Pegasys), oseltamivir (Tamiflu), zanamivir (Relenza), peramivir (Rapivab), and lenacapavir (Sunlenca).

Effects on Nutritional Status

A broad range of antiviral drugs are often used for serious diseases. If these medications are required, an active program of supplementation can often improve efficacy and counteract nutrient loss. Among these medications are AZT (azidothymidine) and zidovudine (Retrovir) for HIV/AIDS and acyclovir (Herpex) for herpes infections. Amantadine and interferon are used for the treatment of hepatitis B and C.

Tamiflu is commonly used for the treatment of flu (influenza) despite data demonstrating virtually no effect on prevention or treatment or hospitalization; it carries a risk of severe side effects in 1 out of 94 people (Vasquez, 2004), including psychiatric and kidney problems in adults, nausea, and vomiting in adults and children (Hanula et al., 2024; Jefferson et al., 2014).

Most antivirals reduce carnitine, copper, zinc, Vitamin B-12, calcium, magnesium, and potassium. Relenza can cause bronchospasm, and Rapivab can cause diarrhea.

Alternatives

Nutritional therapies to support immune health during recovery from influenza or COVID-19 may include IV therapy (the Myer cocktail), thymus glandular, selenium, Vitamins D and E, lysine, probiotics, CoQ10, and medicinal fungi like reishi and turkey tail.

Diabetes

Examples

These include metformin (Glumetza, Fortamet, Riomet, Glucophage), sulfonylureas (glibenclamide, glimepiride, glipizide, tolbutamide, chlorpropamide, tolazamide, glyburide/metformin, glipizide/metformin, pioglitazone/glimepiride, rosiglitazone/glimepiride), and insulin (Humalog, NovoLog, Humulin R, Levemir, Apidra, Exubra, Lantus).

GLP-1 receptor agonists are a class of medications used to manage type 2 diabetes and are also used for weight loss. Some commonly used GLP-1 receptor agonists include exenatide (Byetta, Bydureon), liraglutide (Victoza, Saxenda), dulaglutide (Trulicity), semaglutide (Ozempic, Wegovy), and lixisenatide (Adlyxin).

General Concerns

In rare cases, metformin (Glumetza, Fortamet, Riomet, and Glucophage) may cause a serious condition called lactic acidosis. Anticholinergic drugs, such as Bentyl and Ditropan, Ditropan XL, and Oxytrol, may increase the absorption of diabetes medication, which may lead to low blood sugar. The GLP-1 medications reduce appetite and can cause nausea. Reduced food intake can lead to insufficient nutrients and muscle loss.

Effects on Nutritional Status

Metformin can cause low Vitamin B-12 levels, leading to anemia that results in nerve damage. Take a B-complex vitamin and B-12 lozenge, consume red meat, or obtain Vitamin B-12 shots to prevent anemia if taking metformin long term.

Alternatives

Increase chromium picolinate, Vitamin B-6 (pyridoxal 5'-phosphate), and fiber; aloe, CoQ10, and vanadium all improve blood sugar control.

Diuretics

Examples

These include furosemide (Lasix), caffeine (Vivarin, Cafcit, Alert), indapamide (Lozol), pamabrom (Aqua-Ban, Diurex Aquagels, Diurex Water Capsules, AquaBan with Pamabrom), and loop diuretics (furosemide, bumetanide, torsemide, ethacrynic acid, co-amilofruse).

General Concerns

Side effects include increased urination and sodium loss. Diuretics can also affect blood potassium levels.

Effects on Nutritional Status

Diuretics can reduce calcium, magnesium, B vitamins, and especially potassium and sodium; decrease the absorption of thiamine, zinc, and folate; and cause muscle weakness, decreased mentation, fatigue, and muscle cramps.

Alternatives

Diuretic alternatives include celery, dandelion greens, and parsley (salad of these three things). Supplement with potassium-rich minerals and a B-vitamin-rich multivitamin.

Female Hormones

Examples

These include estrogen (Cenestin, Divigel, Femtrace, Ogen, Menest, Vagifem, Elestrin), progestin (Makena, Plan B, My Way, Megace, Prometrium, Mirena, Skyla), and contraceptives (Nordette, Zeosa, Triphasil, Loestrin, Falmina, Rivora).

General Concerns

Some risks of synthetic hormones include increased risk of endometrial cancer (only if a woman still has her uterus and is not taking progestin along with estrogen), increased risk of blood clots and stroke, and increased chance of gallbladder/gallstone problems.

Effects on Nutritional Status

Hormone replacement and oral contraceptives can reduce B vitamins, magnesium, calcium, and Vitamin C/Vitamin E.

Alternatives

These include bioidentical hormones and nonpharmaceutical contraceptives.

Laxatives

Examples

These include Phillips' Milk of Magnesia, Miralax, Benefiber, Citrucel, FiberCon, Metamucil, Colace, Surfak, Dulcolax, Senokot, and Pedia-Lax.

Effects on Nutritional Status

Laxatives reduce vitamin and nutrient absorption. Generally, patients should avoid laxatives during pregnancy, although psyllium is considered safe during pregnancy; it is contraindicated for bedridden patients and those with altered cognition. Belching, cramping, diarrhea, nausea, and gas can occur. Prolonged use of Colace and Surfak can cause electrolyte imbalance. Metamucil has sugar and food colors added. Dulcolax and Senokot can cause urine discoloration with senna and cascara derivatives. Rectal suppositories may cause rectal irritation.

Alternatives

Adding fiber to the diet, eating 3–4 organic dried prunes, and the judicious use of herbal laxatives like senna and cascara sagrada can eliminate the use of over-the-counter laxatives.

Lipid-Lowering Statins

Examples

These include atorvastatin (Lipitor), simvastatin (Zocor), rosuvastatin (Crestor), pravastatin (Pravachol), lovastatin (Altoprev, Mevacor), ezetimibe/simvastatin (Vytorin), and fluvastatin (Lescol).

Effects on Nutritional Status

Statins lead to lower cholesterol, and they can increase anxiety and rarely suicidality. One side effect of the statin group is muscle tenderness, pain, or weakness (Golomb & Evans, 2008). Infrequently, this can progress to severe muscle breakdown or rhabdomyolysis, which causes severe kidney damage. Other side effects are headache, nausea, flatulence, and constipation. Statins reduce CoQ10 levels and decrease absorption of Vitamins D and E and β-carotene.

Alternatives

Alternatives to statins include red rice yeast and niacin.

Proton Pump Inhibitors (PPIs) and Antacids

Examples

These include omeprazole (Prilosec, Omesec), pantoprazole (Protonix), and esomeprazole (Nexium).

Effects on Nutritional Status

Long-term use of PPIs interferes with the absorption of nutrients and may reduce the efficacy of nonsteroidal anti-inflammatory drugs, antithrombotic drugs, and bisphosphonates. PPIs are particularly dangerous for older adults, and they increase the risk of pneumonia, malnutrition, infections, and fractures (Maggio et al., 2013).

PPIs and antacids inhibit the absorption of Vitamin B-12 and can lead to a Vitamin B-12 deficiency, causing anemia, psychiatric problems, dementia, and nerve damage (Lam et al., 2013). They also deplete Vitamins C and D, folic acid/folate, calcium, magnesium, iron, β-carotene, and zinc.

Nutritional Alternatives

These include Vitamin U, chlorophyll (Gastrazyme), zinc carnosine, slippery elm bark powder, and deglycyrrhizinated licorice root (DGL) extract. Applying an ice pack below the xiphoid process 15 minutes before eating can help contract a loose esophageal sphincter.

Chapter 8: Essential Next Steps for Pharmaceutical Medications

- Identify current medications and their side effects.
- Identify medications' effects on nutritional status and supplement them as needed.
- Develop an enhanced self-care plan with the client.
- Identify psychotropic medications to reduce or eliminate.
- Develop a deprescribing plan and schedule.
- Share the schedule for withdrawal in cooperation with the prescribing clinician.
- Conduct a family/social support session to identify specific areas of support or obstacles.
- Identify inpatient or at-home withdrawal processes.
- Discuss the timeline of your availability to the client during withdrawal and create an "availability contract" so the client can reach the clinician.
- Where necessary, engage (para)professional support/taper coach for food and nutrient administration.
- Begin nutritional protocols at least 2–4 weeks prior to initiating withdrawal.

9

Putting It All Together

Making Recommendations for Success

Diet Essential: *Integrate behavioral change strategies with the principle of nutritional substitutions.*

The concept of biochemical individuality describes how each individual has unique nutritional requirements specific to their genetic makeup based on biological, cultural, environmental, and familial heritage. The essential concepts and methods I present throughout this book describe and explain how our clients can improve their well-being and reduce medication use. Below, I review our most important essential elements to success.

The essence of mental health nutrition is identifying the best nutritional approach for our clients and determining how to best support behavioral changes as we engage their strengths to overcome obstacles.

One of the first goals of a program for your clients is to help them make the connection between what they eat and how they feel, to overcome their *nutritional dissociation*, being disconnected from experiencing the relationship between what they eat and how they feel. The causes of this can range from trauma-induced dissociation to the constant media messages selling foods associated with the SAD diet and pushing pills for every symptom. What clients eat frequently reflects a complex interplay between personality, emotions, family history, culture, and beliefs. Biochemistry also plays a role: NT levels affect food choices and behaviors—some people use

tryptophan-rich foods, fats, or sugar to self-medicate. The microbiome also influences food choices, as bacteria demand their nourishment. The brain depends on fats to communicate, and the carotenoids can affect how fast the brain processes information. The capacity to even adhere to a nutritional plan depends partly on NT levels; low dopamine may make it more difficult for a client to comply with a nutrient program, suggesting that we start with these clients by enhancing dopamine, the "pleasure" NT.

There will also be unique challenges that arise based on each individual's mental health challenges. Restoration of high-quality foods and delivery of nutrients is central to recovery from psychotic disorders, though often fraught with difficulties because self-care and adherence to a therapeutic program are very challenging with this population. For example, we have several avenues of nutritional intervention to improve and treat schizophrenia and psychotic disorders. Factors affecting medication adherence depend heavily on patient support and therapeutic alliance, client insight, and the attitudes about and side effects toward medication (Kikkert et al., 2006). This reinforces the need to enhance the connections between the team members, especially between the client, therapist, and prescriber. In these instances, a caregiver can provide good quality food and supplements, reduce medication side effects, and improve symptoms.

Given the complexity of interactions and the exploration of assessment, food, and nutritional protocols, where do we begin? Our goal is threefold:

1. Combine the knowledge we have acquired and analyzed about the client and then apply strategies drawn from psychoeducation, cognitive-behavioral methods, strengths-based methods, motivational interviewing, and coaching.
2. Define an initial mental health nutrition plan that will benefit our clients.
3. Support our clients' engagement in an increasingly progressive program of self-care, including expanding options for improved diet and supplementation protocols.

To accomplish these goals, we help the client to do the following:

- Identify and prioritize positive changes that are achievable.

- Incorporate positive behaviors and identify and relinquish negative habits.
- Identify and eliminate addictive foods, replacing them with substitutions, one at a time.
- Present food and behavior substitutions that are satisfying.
- Choose the option of alternatives to harmful pharmaceuticals and plan a taper schedule.
- Make explicit personality factors that will enhance or impede change.
- Support strengths and work with obstacles.
- Engage friends and family as a support system.
- Support self-compassion.

Nutritional Change Takes Time

Naturally, we want change to be fast. We have come to expect this by the promise of fast-acting medications and advertisements. But fast-acting often brings side effects. I advise a client with a chronic illness that it takes time to become ill; the causes have been in place for a while, and it will take time to recover, and taking time to recover is worthwhile. Long-term chronic problems often require 1–5 years to resolve, and I advise my clients to expect incremental changes every 3–6 months. I also reinforce that the degree to which they adhere to their program is the degree and rate at which they will recover. This is not to suggest that we offer false hope. Some people, especially with chronic PTSD, anxiety, TBI, or psychotic disorders, may still experience significant symptoms that require management. Still, with this approach, we seek a reduction of suffering and overall improvement.

I use the metaphor of the growth of a tree when I talk with clients about the time it takes for nutritional therapies to work. I may guide them through a visualization of this image: a tree grows slowly but surely, digging roots into the earth for stability as it spreads its branches and leaves to the sky. The roots absorb water from below and the leaves from above. Nourishment comes from many directions. There are many roots, branches, and leaves, and the tree becomes fuller and stronger over time. This slow but sure approach promises success so that when the wind blows, the tree

does not topple over easily but moves with the wind. This is the process of nature and mental health nutrition.

Change occurs most effectively by integrating positive habits first, creating a foundation that then makes it easier to eliminate negative habits. This requires taking a step-by-step approach to identifying one positive behavior that will change or replace a negative behavior and employing the principle of substitutions that address emotional, affective nutritional and psychobiological bases for behaviors outlined in this book.

I also focus on the specific actions that will improve well-being based on the goals we have set together. I ask clients to pay attention to changes and suggest how long it will take to observe them.

I focus on specific changes to watch for, such as the following:

- Reducing caffeine leads to better sleep.
- Eating breakfast and better-quality protein will improve energy and mood stability.
- Increasing anti-inflammatory foods will reduce pain.
- Increasing magnesium intake leads to less anxiety and improved sleep.

Box 9.1
The Power of Connection: Interpersonal Neurobiology, Psychodynamic Psychotherapy, and Narrative Therapies

After a decade of practicing somatic therapies with clients, I trained in psychodynamic psychotherapy, where the emphasis on crafting a coherent story that includes the story of the mind and body in the context of a healing relationship has become integral to my clinical approach. In chronic illness, clients often express their stories through physical symptoms, and in somatic therapies, we work together to “make sense” of the language of the body. In psychodynamics and narrative therapies, we also engage with storytelling—making sense of how the past shapes the present by restoring missing pieces, finding meaning, and bringing coherence to often fragmented experiences and dissociated pain. This process unfolds within a safe, boundaried relationship informed by empathy and connection.

My clinical experience has shown that by fostering deeper insight into relational dynamics and emotional patterns, these principles help clients better understand their internal processes and external behaviors; interpersonal neurobiology also advances these goals by focusing on connection, empathy, and enhancing neural flexibility. This helps strengthen self-awareness and emotional resilience, leading to improved adherence to self-care. For instance, when engaged in the intake and assessment the process evolves beyond merely reciting physical and emotional ailments into a meaningful narrative full of discovery and meaning. As a client’s story becomes coherent, it fosters a sense of meaning that mirrors the integration of neural pathways in the brain, reinforcing behavioral change.

The common thread across these methods is the transformative potential of the restorative relationship, the active sharing of the narrative of one's life. All of which fosters insight and motivation, especially for individuals who have experienced adverse events and attachment injuries in early life.

The Bidirectional Role of Nutrition

In this context, nutritional interventions play a bidirectional role in mental health and are effective at every stage of healing. Some clients may first seek somatic or dietary strategies for their health while unconsciously bypassing counseling and the emotional effects of stress or past traumas on their health. Over time they may become ready for psychotherapeutic work. Or they may be especially cerebral or focused on their emotional self and less engaged with activities of physical well-being. At some point in the therapy process (and with the therapist's help), they become ready to engage their well-being and make previously eschewed nutritional changes to aid their self-regulation, complement neural and synaptic connectivity, and bridge their psychological and biological resilience.

Essential nutrients play specific roles in this process. Omega-3 fatty acids and phospholipids like phosphatidylcholine provide the nourishment needed to improve neuronal membrane fluidity and signaling. Dietary fats, like olive and avocado oil, enhance neuronal membrane flexibility. Amino acids from protein provide the building blocks for neurotransmitter synthesis, aided by zinc, magnesium, B vitamins (B-6, B-9, and B-12), and iron, which drive enzymatic processes crucial for neurotransmitter production and neural connectivity. Probiotics and prebiotics strengthen gut-brain interactions and synthesis of GABA and serotonin, which support emotional self-regulation. Choline-rich foods like eggs and liver feed the synthesis of acetylcholine, which promotes the formation of new synapses in response to learning and stimulates brain-derived neurotrophic factor (BDNF), further enhancing synaptic plasticity. These nutritional interventions undergird emotional resilience with the substrates required for biological resilience and physical readiness to change. When aligned with clients' evolving personal narratives, nutrition creates a foundation for more profound and transformative healing. While this chapter focuses on the necessary steps to initiating and sustaining successful behavioral change—readiness and resolving ambivalence using motivational interviewing, CBT,

health coaching, and SMART approaches—we remember to synergize change through the persistent flow of connection and empathy. Like a steady mountain stream, this therapeutic connection moves over, under, and around obstacles, adjusting its flow—slowing in resistance, speeding in openness, yet always persisting in its course.

Starting Out

Chapter 1 reviews the spectrum of roles the mental health nutrition clinician might play, including (1) psychoeducation, (2) collaboration, and (3) autonomous practice. The clinician new to nutrition may begin by incorporating simple, self-care aspects of nutrition into treatment. Generally, our clients have suffered for many years without knowing why. Psychoeducation provides explanations illustrating the links between nutritional and dietary patterns and mental health. In psychotherapy, we talk about emotional nourishment. Here, we add in nutritional nourishment. Psychoeducation also includes information about dietary recommendations essential to the empowerment process. I explain that B-complex vitamins support blood glucose regulation and mood. This can reinforce a better understanding of the importance of a B vitamin daily. I will share an herbal tea in the waiting room (or share a recipe if we meet virtually) and a handout of the recipe and its benefits.

As you develop experience and expertise working with a client, you will deepen and broaden a comprehensive plan. When a clinician is just beginning to incorporate nutrition, I suggest setting aside time during each appointment to discuss the client's self-care behaviors, focusing on nutrition. This approach provides an opportunity to make recommendations and discuss any obstacles while still carrying out the psychotherapeutic process.

Focusing on the information collected in the Korn Food/Mood Diary is an excellent place to begin this process. This will lead to providing homework that incorporates the results and decisions arising from a discussion about the diary. Providing handouts, resources, and recipes complements this process. Once this first phase is complete, the next stage involves a more complex analysis and the development of a written report containing dietary and nutritional supplementation protocols.

Providing a Written and Verbal Report

I write a comprehensive written report and analysis for each of my clients. I then allocate time to review it with them while they read along. I suggest recommendations in the report tailored to the client's needs and reference materials.

Based on your client's readiness for change and the degree to which they are willing to make changes in their current nutritional patterns, you may choose to go step by step with small incremental changes, or your client may be ready to implement a comprehensive analysis that points the way to change that will be enacted over the next 6–12 months. Their stage will determine your approach. For example, you may work with a client by incorporating one healthy behavior while eliminating one unhealthy choice.

Based on the stage of change and motivational interviewing methods, I describe goals and clarify action steps into flexible 1-, 3-, 6-, 12-, and 18-month phases. This approach allows the client to act immediately and keep future goals in mind.

Following the initial review of the plan, the client will need time to digest the information in the written report and to ask questions, and it is very likely that when the client returns to the next appointment, more questions and concerns will arise. Subsequent sessions can occur during therapy, with part of each session assigned to discuss progress, obstacles, and check-in on the client's progress. Our theoretical orientation will color our approach in this work, but we must maintain therapeutic rapport and trust regardless of our methods.

During the assessment process, you have compiled and integrated information about the client, their narrative, and the strengths and challenges they bring to the change process. At this stage, you will clarify those strengths, identify obstacles, and prioritize goals with them. Often, there is too much focus on what clients cannot eat rather than what they can, resulting in an emotional trigger. Focus on what they can have and include foods they enjoy eating and their sensory nature. You may discover that your client will benefit from various pills or capsules but may also have difficulty swallowing them. You may want to suggest liquid oils or powdered nutrients. A client may discuss financial obstacles in buying nutrients; part of your emphasis may be identifying how to ensure those nutrients are available through whole food preparation and selected supplement purchases. An example of this approach is exploring whether it might be better to obtain probiotic bacteria by preparing sauerkraut or

homemade yogurt at home or by purchasing a (more expensive) supplement.

You may have discovered during the intake that your client is interested in changing their diet, but their family members are unwilling or reluctant to do so. The failure of the family to participate in a whole health program is a sure recipe for failure. You may, therefore, choose at this stage to engage the family in one session or more that informs and educates them about the needs for these changes and that gains their agreement. Finally, as you work with your clients, you may find that they will benefit from group support even more than individual counseling, and they can join your food-mood support group.

Contents of the Written Report

I provide narrative sections that include the following:

- Symptoms and complaints
- A list of the goals for change the client named during the intake process
- Three short-term action items of change
- Three medium and long-term action items of change
- Sample dietary suggestions that are isomorphic to the client
- Essential dietary or food guidelines, including metabolizer type and ideal range of food ratios
- Suggestions for additional testing
- Nutritional supplement protocol
- Additional resources and handouts, including unique recipes or suggested reading

Principles of Dietary and Nutrient Recommendations

- Start with where you will observe the fastest and most important changes.
- Start slowly and build according to adherence capacity.
- Always balance the use of vitamins, minerals, botanicals, and glandulars.
- Review and change the protocol every 3–6 months (or as necessary).

- Combine nutrients to include powders and liquids or reduce the number of pills and capsules required.

Stages-of-Change Model

The Stages-of-Change model provides a framework for understanding the change process by describing five points of readiness: precontemplation, contemplation, preparation/determination, action/willpower, and maintenance. By identifying where a person is in the change cycle, you can tailor interventions to the individual's readiness to progress in the recovery process. Interventions that do not match the person's readiness are less likely to succeed and more likely to hurt rapport, create resistance, and impede change.

The Stages-of-Change model, initially developed to support addiction treatment through motivational interviewing, has also proven highly effective in nutritional counseling. Just as we strive to find a method or technique that is isomorphic to the client's belief system, identifying the client's stage of change promises greater success in aligning interventions and goals.

First Stage of Change: Precontemplation

The earliest stage of precontemplation is when clients may not want to change, may be unaware that they need to change, or may feel helpless to change (Herrin & Larkin, 2013, p. 99). Linking the results of the Korn Food/Mood Diary is a place to begin as clients start to make connections between mood and food choices and behaviors. This is where I began with Joan during the first week, as we reviewed her diary. Small incremental changes bring fast results, like a high-protein, low-carbohydrate diet for seven days to stabilize her blood sugar. The assessment process can also be divided into sections to address relevant symptoms or behaviors so that, once the veil of avoidance is lifted, your clients do not feel overwhelmed.

The Elicit-Provide-Elicit Technique

At every stage of my consultations with clients, I apply methods that actively engage the client in the change process. The elicit-provide-elicit technique, presented by Miller and Rollnick (2012) in their motivational interviewing approach, is a way of determining what level of understanding the client already has regarding the changes they could be making, and

clarifying misconceptions where needed. It also addresses obstacles to change and, importantly, allows the practitioner to actively help the patient find a way to integrate the changes. There are three parts to the elicit-provide-elicit technique:

1. **Elicit.** Ask the client directly what they already know.
2. **Provide.** Clarify any misconceptions or lack of knowledge they may have.
3. **Elicit.** Explore what this information means to the client.

Joan's story continues from Chapter 3, in the sample dialogue for the Korn Food/Mood Diary. Joan and I discussed her use of poor-quality fats that emerged from the diary. This is an essential first step that can educate her about eliminating poor-quality fats and substituting them with good-quality fats. It also introduces Joan a little further to the challenges she may experience.

The following is an example of how the elicit-provide-elicit technique worked with Joan to support her use of better-quality fats and oils for mental health and elimination of trans fats (Butterworth, 2010).

Clinician (elicit): Joan, I'm curious about what you already know about the effects of fats and oils on depression.
Joan: Well, I heard some fats are good for you, and some are not, but I don't know which.
Clinician (provide): You are exactly right; there are differences between good and bad fats. We now know that good fats improve mood and can help depression, while bad fats contribute to depression.
Joan: What they tell us seems constantly changing and confusing, so I don't do anything.
Clinician (asking for permission to provide): It can be confusing! Would it be helpful if I simplified it a bit for you?
Joan (nods): Yes, please do.
Clinician (provide): Some things we may have heard about fats in the past, such as butter being bad for you, are untrue. We know that eliminating fried foods and fast foods is healthy, and eating good-quality butter, extra virgin olive oil, and extra virgin coconut oil is very helpful for the brain and mood.

Joan: That makes sense. But it seems like it could be expensive.
Clinician (elicit): It sounds like you would be willing to make some changes if they're affordable. We have discussed eliminating unhealthy foods and adding in some healthy ones. What could you see yourself doing right now with the options we discussed?
Joan: If I could do it one thing at a time and find ways to enjoy food and treats still, I wouldn't feel deprived. I suppose I could replace my processed snacks with those that have these healthier fats.
Clinician (provide): Joan, I think changing one thing at a time is a great plan. You may be pleasantly surprised that you will still enjoy many of your favorite foods and not feel deprived. You seem very committed to improving your physical and mental health, so I think you will be successful. What other questions do you have before we end today?

Assessing Importance Technique

Another helpful technique introduced by Miller and Rollnick (2012) involves assessing importance, a technique that provides an opportunity to enhance client motivation to adhere to the nutritional program. It allows you to score the importance a client assigns to their behavior on a scale of 0 to 10, evoke change talk, and then identify what can increase the priority for a required behavior change.

The following example of the assessing importance technique with Joan is adapted from Susan Butterworth (Butterworth, 2010).

Clinician: Joan, we have reviewed some of the changes you can make about the use of good fats versus bad fats. I'd like to hear more about where you feel this change fits your current life. Would that be okay?
Joan: (Nods) Yes.
Clinician: On a scale of 0 to 10, with 0 meaning not important and 10 meaning the most essential thing in your life, where would you rate the importance of replacing bad fats with good fats in your diet?
Joan: Eight.
Clinician: That's pretty high! Why are you an eight and not a two or three?
Joan: Well, I like the taste of extra virgin olive oil, although it can be expensive.

Clinician: Why else?
Joan: It's good to hear that butter isn't bad for me. I've always liked it, and it's cheap and easy to use.
Clinician: Why else is this so important to you?
Joan: I'm intrigued that these changes could help my moods. And it's really important for me to feel better in that way.
Clinician: Although cost is an issue for you, you seem to have many good reasons for making these changes in your diet, especially starting with butter and olive oil. How confident are you that you could make these changes?
Joan: Oh, very confident—it won't be that hard.
Clinician: So, where does this all leave you? What is your next concrete step?
Joan: Well, I'm going to buy butter at the store and check out the cost of olive oil to see where it's cheaper. I will also try to buy some healthier snacks.
Clinician: I can hear the excitement and commitment in your voice! I look forward to checking in with you next time to see how it all went.

Second Stage of Change: Contemplation

This stage involves acknowledging that there is a problem but struggling with ambivalence. Joan is in this current stage and will return here with each change she contemplates making. In the contemplation stage, Joan considers the positive reasons for change. If she eats less fast food and cooks for herself more, for example, she will have more energy and feel better. On the other hand, it will take a lot more time and energy just to get started. And, of course, there are the obstacles to enacting that change. This is where we work with ambivalence (Herrin & Larkin, 2013).

The Evoking Change Talk

Evoking change talk is a cornerstone of motivational interviewing. Here, we ask the client to identify reasons to change and elicit a plan of action in at least one area according to the patient's readiness to change. The objective is to evoke the patient's desire, ability, reasons, and need to change during a session, to strengthen the patient's commitment to the behavior. This "change talk" predicts increased commitment strength to the lifestyle change, and this directly correlates with clinical outcomes. The following example is adapted from Susan Butterworth (Butterworth, 2010).

Clinician: Joan, what might be the top three benefits of switching to healthy fats?
Joan: Well, you said it was better for my brain and might prevent memory loss, which is important to me. My skin would look better, and I might be in a better mood more often.
Clinician: How would your life be different in 6 months if you consistently chose to eat healthy fats?
Joan: I have been so moody and tired that I would expect in 6 months I would have more energy and not be so depressed. Plus, I would feel more in control of my life.
Clinician: Wow, that's a pretty powerful statement: feeling more in control of your life. How would that impact you?
Joan: It would impact everything—my confidence, my self-esteem, my relationships, my anxiety.

Third Stage of Change: Preparation/Determination

The change preparation or decision-making stage involves taking steps and getting ready to change, with the client planning to act within the next 1–2 months. This is where specific goals and strategies are identified (Herrin & Larkin, 2013). Joan has identified some actions she can take, which I will reinforce when we meet.

Fourth Stage of Change: Action/Willpower

This stage of change involves acting on behavioral strategies in specific and practical ways. Joan will engage in menu planning, make new purchases, and may begin to identify who in her life can support her. She may also update her Korn Food/Mood Diary, which we can review when we meet.

Fifth Stage of Change: Maintenance

The maintenance stage is still in Joan's future. Her incremental changes with healthy fats may become solidified over the next several months. We will review obstacles to using quality fats, such as eating out or being a guest, and explore how to cope with these challenges while processing any triggers for relapse (Herrin & Larkin, 2013).

Coaching for Successful Adherence

There are as many styles of motivating and coaching for success as there are psychotherapeutic styles, and how we coach our clients generally derives from our approach to counseling. Like psychotherapy and counseling, coaching styles should be congruent with the client's belief systems. Coaching styles can reflect the client's stage of change, fit their personality, or gently nudge them in a new direction.

SMART Goal-Setting Theory

SMART stands for setting specific, measurable, achievable, relevant, and time-bound goals. The SMART goal-setting theory is valuable when creating a mental health nutrition plan. This approach is based on the information gathered from the intake form or the Korn Food/Mood Diary. The goals can be structured in increments of 3, 5, 12, or 18 months, providing a clear road map for the client's progress at a pace that feels comfortable.

COM-B (Capability, Opportunity, Motivation, Behavior) Model

In contrast to the more rigid five stages of change model, the COM-B model may be a more flexible approach for some clients. This model focuses on understanding how capability, opportunity, and motivation influence behavior. It delves into an individual's physical and psychological capacity to engage in a behavior, the external factors that prompt the behavior, and the conscious and unconscious processes that drive motivation. This comprehensive understanding can be a powerful tool in coaching, enabling a more holistic approach to behavior change.

The Self-Determination Theory

The self-determination model may apply when working with individuals with eating disorders (Deci et al., 2023), mainly because making recommendations is especially fraught when working with individuals who may already restrict or binge.

Mindfulness

Whatever methods you use, all the above combine well with an engaging, eclectic approach that encourages self-coaching, supports the client's inner voice or inner coach, and identifies specific, actionable changes. I always try to practice mindfulness in the clinical engagement and teach a mindful

approach to the client so they experience a compassionate, moment-to-moment experience to self-change. Mindfulness balances the paradox of goals for change with a “no goals” approach. I may also use directive coaching when appropriate, for example, when a client’s belief in what is possible is flagging or if the client has doubts about efficacy. I use a directive approach sparingly, like one adds salt to a meal: I might say, “If you make the changes I am recommending, you will get better,” “I have no doubt that if you do this, you will improve,” “If you commit, you will see the results.” Clients always benefit from unconditional positive regard but also need firm reassurances to quell their doubts.

Box 9.2 describes simple changes to table design that support desired behavioral changes.

Box 9.2
Plates and Colors

The size and color of dinnerware affect how much you eat. Smaller plates reduce portion size. Colors that contrast the food on the plate will help you to eat less, and plate colors that match the food will help you to eat more. Tablecloths with low contrast to plate color will reduce the desire to overeat (Van Ittersum & Wansink, 2012).

Break Down Expected Costs on a Daily or Monthly Basis

Finances are often a concern when making healthful changes. For example, Joan expressed concern that cost was a factor in her decision to change to olive oil. Working creatively with your client to reinforce the medicinal benefits of healthy foods and nutrients is essential. Adopting preventive strategies reduces the costs of healthcare and medicine. Most nutritional products sell at retail prices marked up by 100% of the wholesale price. If you coordinate with a nonprofit cooperative purchasing, a wholesale club, or tribal clinics/pharmacies, it is possible to secure the highest-quality nutrients at wholesale prices. This makes them more affordable for your clients with minimal markup. Occasionally, a physician can prescribe vitamins and oils for diagnoses, such as fish oil for major depression, and insurance companies will cover the costs. Many companies will provide product samples that you can share with your clients.

Box 9.3 identifies a variety of tips to save money while shopping for high-quality foods.

Box 9.3
Money-Saving Shopping and Food-Buying Tips

- Join a community-supported agriculture (CSA) group or volunteer at a co-op or farm to get reduced prices.
- Day-old bins at the supermarket often have vegetables that make good soups.
- Healthy food is most often on the perimeter of the supermarket.
- Buy in bulk.
- Buy bones and cheap cuts of meat for flavoring and making broths for soups and sauté.
- Fresh produce is the lowest price when it is in season.
- Shop at diverse food stores, including Mexican, Asian, West Asian, African, Halal, and Indian stores, which often have less expensive herbs, fresh roots, and low farm-to-store pricing.
- Buy frozen foods like berries to save money and retain quality.
- Buy a dehydrator to dry and store abundant summer fruit and vegetables.
- Shop for and preprep meals so that half of your plate is fruits and vegetables.
- Leafy greens like kale, chard, collards, spinach, and broccoli are some of the most nutritious and least expensive foods you can buy.
- Canned salmon, sardines (boneless, skinless), smoked mackerel, and anchovies are inexpensive alternatives to fresh fish.
- Avoid packaged or canned food with more than four ingredients on the label.

Writing a grocery list while planning meals will save money and time. Many valuable and easy-to-use apps for computers and other instruments are available to do this. The following outlines some basic principles of meal planning.

Meal Planning

1. Create a list of your family's favorite recipes and make sure they are easily accessible, whether these are in cookbooks or bookmarked on your browser.
2. Clean and organize your freezer to make room for leftovers. Glass storage containers and glass baking dishes will be helpful. You can also freeze leftovers using beeswax wraps or parchment paper.
3. Keep track of items you are running low on or need to restock in your cupboards. A magnetized whiteboard on the fridge or a notepad in the kitchen can be handy. Be sure to bring this list when you go to the store.

4. Keep track of the meals you cook for the week using a kitchen calendar, a day planner, or a magnetized whiteboard. Use this to note things to do in advance, like thawing or marinating meat.
5. In addition to planning dinner for each night of the week, it may also be helpful to plan the other meals of the day, including snacks.
6. Shop your pantry: check your refrigerator, freezer, and shelf goods for leftovers, fruits and vegetables past peak, and items nearing expiration; plan these into your meals and snacks to avoid waste.
7. Before going to the store, create your list. Look at your favorite recipes and choose which ones you want to cook for the week. Write down everything that you will need. Make columns for different parts of the store and list the ingredients you need from each one. For instance, create columns for produce, bulk, dairy, meat, and frozen food.
8. During the week, save vegetable peelings in a tub in the fridge to add them to your vegetable stock.

A common reason people do not prepare healthy food is that they need more time to cook. Preparing a large, nutritious meal on the weekend and cooking enough so that there are leftovers is one way to ensure that healthy food is available during busy times. Meals that freeze well include broth-based soups and casseroles. When making a casserole, double the recipe, freeze the extra in small meal-size containers, and defrost and heat on another day.

Plan and Prep a Week at a Time

1. Pick a day of the week to organize food and food prep for the week. For example, prepare the basic tasks on Sunday to last the week.
2. Roast one chicken and eat half for Sunday dinner. Bone the other half and prepare as a chicken salad for lunch, or store it for later in the week as a meal or a snack.
3. Use a slow cooker to simmer all your leftover meat bones for bone broth. Strain to use as a base for preparing rice or soup later, like slow cooker chicken soup with leftover chicken, vegetables, onions, and garlic.
4. Integrate the family in cooking or plan a potluck or food exchange with friends. If you are making soup, make a double batch and trade it

with a friend who is making another soup or casserole.

5. When beginning to cook a meal, think ahead for the following few meals and consider any preparation methods, such as soaking legumes or nuts or marinating meat.
6. Wash and prepare your vegetables for the week so they are ready for easy use in cooking or for snacking, such as carrots, celery, broccoli, lettuce, bell peppers, mushrooms, and zucchini.
7. Gather all the vegetables you want for salads and prepare raw salads in jars for 3–4 days at a time (see Box 6.7 in Chapter 6 for an example recipe).
8. Make a vegetable broth rich in potassium by placing all the stems and ends of vegetables in a slow cooker.
9. Peel large amounts of garlic, place whole bulbs in the oven, and bake at 300°F until the individual cloves open. Remove from the oven, pull apart individual cloves, and refrigerate to use throughout the week.
10. Fill a baking tray of sweet potatoes and bake; store in the fridge. Slice and eat cold, make into a custard as a dessert reheat, and top with butter, or cut and pan-fry quickly in butter and balsamic vinegar.
11. Steam beets and store them in the fridge. Add yogurt and eat as a snack or slice over salad.
12. Prepare two or three salad dressings, choosing from the recipes in Section H.8 in Appendix H, and store them in bottles in the fridge for use during the week.
13. Prepare several cups of brown rice or another grain, reheat, and add to soups or stir-fried as needed throughout the week.
14. Soak almonds and raisins covered with water in a plastic container and let sit overnight. Use as needed. Save the liquid to use as a sweetener.
15. Place a cheese slice and a hard-boiled egg in a plastic container or plastic bag for an easy protein snack.
16. Put bone broth in a thermos to sip on throughout the day.

Traveling With Cooler Bags and Thermoses

Equipping yourself with cooler bags when you travel allows you to make healthier food choices and gives you a sense of preparedness and control over your meals. Fill baggies with water (you may include a clean sponge) and freeze them to use as freezer packs. This way, you can keep healthy

travel foods fresh and ready to eat, such as hard-boiled eggs, dried fruit and nuts, fresh fruit and raw vegetables, aged hard cheeses, gluten-free or whole-grain crackers, canned Pacific wild salmon, sardines or anchovies, olive oil and vinegar or salad dressing for salads, cleaned and chopped fresh greens, almond butter, yogurt, hummus, and water, Kombucha, or herbal beverages in glass bottles.

Tips for Traveling and Eating While on Vacation

- Avoid high-carbohydrate foods at breakfast and opt for simple protein foods like hard-boiled eggs and sliced bacon. *Note*: at most hotels and buffets, scrambled eggs come from a premade egg mix, and sausage meat has additives, so choose whole eggs and meats when possible, and fresh fruit.
- Order salad with grilled meat for lunch, and ask for simple dressings like olive oil and vinegar/lemon. They usually have this in the kitchen.
- Choose proteins less likely to be mass-produced, like venison, bison, or lamb, and choose wild-caught fish (preferably from Alaska).
- Avoid soups in restaurants because they are typically high in wheat and MSG.
- In case you cannot get to a store, travel with a small supply of energy bars, almonds, rice cakes, almond butter, hard-boiled eggs, and canned sardines.
- If staying with friends or family, you can buy groceries to contribute healthy meal options.

Cooking Methods

The relationships among whole foods, slow or minimal processing, freshness, and good nutrition are unquestionable. However, many people do not know where to begin. For many foods, the least amount of processing (raw) ensures the maximum nutrition and health benefits; for others, a long slow cook or a quick steam is best. Slow cooking in water, boiling, salting, broiling, pickling, roasting, baking, drying, steaming, fermenting, and smoking are the preferable processing methods that ensure maximum nutrition. Frying, deep-fat frying, high-temperature cooking, and preserving

with nitrates and nitrites are the most dangerous methods and contribute to poor mental health.

Eliminating Microwave Use

Microwaves alter the molecular structure of food and can degrade nutritional benefits. Do not use microwave ovens to heat food. Microwaves produce unnatural molecules in food and transform other molecules and amino acids into toxic and carcinogenic forms (Michalak et al., 2020; Mumtaz et al., 2022). Repurpose your microwave and use the “lazy Susan” plate inside the microwave, which is ideal for storing spice and herb bottles.

Slow Cooker

If you have only one appliance in the kitchen, it should be the versatile slow cooker (e.g., Crock-Pot®). This is one of the best ways to introduce cooking to someone who does not cook or does not have much time to cook. Using a slow cooker is inexpensive, and slow-cooking foods, especially bones, meats, and legumes, at low temperatures is the best way to retain nutrients. Always use unsalted butter and sea salt when cooking with the slow cooker, and be sure to put meat juices back into sauces and stews—they are rich in “happiness” amino acids.

Blenders

Blenders are the next appliance to buy for making smoothies, sauces, and dressings. High-speed blenders are the best option, as typical household blenders cannot process hard foods like nuts and seeds and will not produce as smooth a liquid.

Provide Resources

We must advocate for social change and food security in our work with clients. Mental illness is a public health issue. Knowing local resources and referral points for clients will be essential. Guiding them with forms such as their flexible spending and health savings accounts can often cover some of their expenses for nutritional supplements. Specific diagnostic categories can also reduce costs; for example, a diagnosis of “obesity” will support health club membership. Many health field licensure programs have free or low-cost internship programs to support clinical care.

Community-Supported Agriculture and Home Gardens

Community-supported agriculture programs (CSAs) are local food production farms with a centralized distribution area in urban settings. Volunteering on a farm during the summer brings down the cost, and many of these farms also engage in humane animal husbandry, which can supply quality animal-based proteins. Encouraging home gardens, an herbal kitchen with culinary herbs, or just exploring the use of herbal roots and leaves is an essential start for clients making changes.

Couples and Families

Mindful eating extends to couples, families, and group activity as well. Even the simple though often forgotten act of eating together as a family and sharing news of the day reduces weight gain compared to families who watch TV (Wansink & Van Kleef, 2013). How do we get children to participate in healthy nutritional and behavioral changes?

Beginning by age 8, children are excellent helpers in the kitchen. Cooking together is fun and involves skill building, including learning math and measurements, geography, chemistry, nutrition, patience, and teamwork. If your child is studying something in school, consider planning a theme dinner around that geographic location, include culturally diverse cuisines, and invite one of their friends or family to participate. The skill of cooking is becoming a lost art, and equipping your child to cook is a lasting healthy gift. For example, at our house we have tamale-making night; in addition to the fun group effort, it is an opportunity to talk about tamales, where corn is from, where salsas and chilies are from, and coconut and chocolate. Younger children can learn to count by measuring and practicing their reading skills by reading recipes.

Cooking With Kids

- Take children shopping so they can help pick ingredients.
- Have healthy snacks in easy-to-reach places for kids to encourage healthy eating.
- Make it fun and exciting to encourage them—play music and have a conversation.
- Make a list of activities for children to help within the kitchen.

- Make yogurt.
- Make sprouts and watch them grow.
- Plant wheat berries and watch them grow into wheatgrass.
- Make healthy cupcakes.
- Measure ingredients.
- Make fun, simple recipes like Healthy Chocolate-Almond-Coconut Treats (see Box 6.17 in Chapter 6)
- Make smoothies.
- Make sauerkraut and then put it on hot dogs.
- Make gluten-free pizza dough and then have a pizza party.
- Use a spiralizer—they are fun.

Psychoeducation Nutrition Groups

Developing a mental health nutrition group focused on food and mood can be beneficial for all clients, including those with eating disorders, those in sexual abuse or addiction recovery, and people with depression or schizophrenia. Groups may also focus on educating parents about food and mood for children with a diagnosis of ADHD, or they may be topic-specific, like a 3–6 week group on sleep or anxiety. Addressing issues common to older adults is also helpful and brings people who feel lonely together. These types of groups also work well when you have 4–8 clients who are at various stages of tapering psychotropic medications.

I have developed many of these diagnostic-specific groups, and the basics are the same:

- Engage people to be more compassionate with themselves.
- Consider the role of food and eating behaviors in their lives.
- Engage in a more social psychoeducational approach infused with mindfulness exercises.
- Educate about the second brain.
- Review myths about foods.
- Reframe food as medicine and share recipes, tips, and support.

This psychoeducational program combines experiential methods of mindful eating with nutrition education, psychotherapeutic exchange, and

participant sharing. The groups are limited to 6–8 people and may run from 90 to 120 minutes over a renewable, 12-week series. These groups may also include yoga or stretching, smoothie making, food tasting, and various supports that reduce symptoms.

A 12-Week Food-Mood Psychoeducational Group Format

- Week 1: Introductions and compassionate goal setting; introduction to mindfulness
- Week 2: Mindfulness practice; introduction to and filling out the Korn Food/Mood Diary; further reflection on goals and obstacles
- Week 3: Discussing the meaning of food and one's relationship with it; the mindfulness raisin exercise (see Box 2.1)
- Week 4: Foods in the family of origin/current family; the 4–7–8 breathing exercise (see Box 4.1)
- Week 5: Food and addictions: How do we use food to self-medicate? What are the healthy alternatives to sugar and refined foods?
- Week 6: Food and body image: How do we decide what we eat?
- Week 7: The second brain: Food and digestion. How do we feel when we eat? From mouth to elimination: What foods and nutrients enhance digestion?
- Week 8: Fear of fats; fear of fat
- Week 9: Making healthy foods and smoothies
- Week 10: Overcoming obstacles; making a list for support
- Week 11: Identifying strengths and next steps; plan for final gathering
- Week 12: Final "party" where each person brings a healthy dish with a recipe copy and shares its benefits for mental well-being

Integrating nutrition into mental health practice is both feasible and essential. It is the missing piece in our work as mental health clinicians. The approaches outlined in this book promise improvement—ranging from the most basic level of stabilizing mood by managing blood glucose levels to more advanced medication withdrawal techniques and comprehensive nutrient schedules to prevent and treat chronic illness. Every clinician can take the steps necessary to integrate these methods. Doing so requires exploring these methods first for oneself, then initiating the process step by

step with willing clients. If the clinician offers these services, people will respond positively. A list for options is provided in the Resources section at the back of the book. This, in turn, will lead to a thriving practice in any setting that will enhance treatment efficacy for people of all cultures and ages.

Chapter 9: Essential Next Steps to Put It All Together

- Work with the client to identify the first steps for change.
- Incorporate motivational interviewing into nutritional changes.
- Coach for success using diverse methods.
- Provide a written nutritional report and review it with the client.
- Provide specific resources and handouts to support success.
- Consider the role of group support and develop your food-mood group.
- Enjoy a healthy meal with family and friends.

Appendices

These appendices offer further forms, recipes, and resources to complement the dicussions in the text. To access a multitude of bonus recipes, downloadable sample forms, and other supplementary resources, visit drlesliekorn.com/books/nutrition-essentials-bonus-material/ (using access code “goodmood”).

Appendix A

Guidelines for a Hypoglycemic Diet

General Guidelines for a Hypoglycemic Diet

- Eat six small meals a day, or three meals with snacks in between.
- Always mix proteins and carbohydrates.
- No refined sugar or flour.
- Eat 2–3 ounces of food every 2–3 hours depending on need.
- Don’t allow yourself to get hungry.
- Never eat carbohydrates alone—always include protein.
- Eat a little before exercise and after.
- Drink plenty of water.

An Example of a Hypoglycemic Meal Plan

Time	Snack or Meal
6 a.m.	**Meal:** 1 egg and 1 piece of whole-grain (or gluten-free) bread, with some herbal tea
8 a.m.	**Snack:** 2 oz of protein with whole grains, or oatmeal with nuts
10 a.m.	**Snack:** 1 apple, or 1 oz of dried fruit (such as organic dried apricots) and 10 almonds
12 p.m.	**Meal:** 4–6 oz of protein (animal) with 1 sweet potato and 1 cup of raw vegetables with olive oil and vinegar or lemon-juice salad dressing
2 p.m.	**Snack:** 1 tablespoon nut butter (rice cake optional)
4 p.m.	**Snack:** Hard-boiled egg (whole grain, gluten-free bread optional)
6 p.m.	**Meal:** 4–6 oz protein (beans or animal protein) with 1 cup greens (salad or steamed) with vegetables, and 1 cup of whole grains

Time	Snack or Meal
Before bed	**Snack:** 2 crackers (gluten-free optional) and 1 oz of cheese; or 1 oz turkey or tuna

Appendix B

The Korn Food/Mood Diary

B.1. Korn Food/Mood Diary for Clients

Korn Food/Mood Diary Name:_____Date: (mm/dd/yy)					
Write down everything you eat and drink for three days, including all snacks, beverages, and water. Please include approximate amounts. Describe energy, mood, or digestive responses associated with a meal/snack within 2 hours of eating and record it in the right-hand column. Use an up arrow (↑) for an increase in energy/mood, down arrow (↓) for a decrease in energy/mood, and an equal sign (=) if energy/mood is unchanged.					
Time of waking:___a.m./p.m.					
Meal	**Foods**	**Beverages**	**Energy Level** (↑, ↓, or =)	**Mood** (↑, ↓, or =)	**Digestive Response** (gas, bloating, gurgling, elimination, etc.)
Breakfast (Time:__)					
Snacks (Time:__)					
Lunch (Time:__)					
Snacks (Time:__)					

Meal	**Foods**	**Beverages**	**Energy Level** (↑, ↓, or =)	**Mood** (↑, ↓, or =)	**Digestive Response** (gas, bloating, gurgling, elimination, etc.)
Dinner (Time:__)					
Snacks (Time:__)					

B.2. Clinician Checklist for the Korn Food/Mood Diary

Question	Answer	Goals and Recommendations
1. How much time passes between when the client awakens and when they eat breakfast? Is the client eating breakfast?		Breakfast should include at least 3–4 ounces of protein within 30–60 minutes of waking for proper energy and blood sugar balancing, especially when under stress.
2. How much water/broth is the client drinking throughout the day?		Daily water intake should be about 50% of body weight in ounces (e.g., if a person weighs 160 lbs, they should be drinking 80 ounces of water daily).
3. How often is the client eating? How many hours between each meal or snack?		People with reactive hypoglycemia and mood swings benefit from eating every 3–4 hours. Ideally eat at least 3 meals/day and 2 snacks.
4. How many servings of vegetables is the client eating per day?		At least 3–6 servings of vegetables should be eaten every day. A serving equals ½ to 1 cup.
5. Is the client eating raw vegetables and fruits?		At least 1–3 servings of raw fruit or vegetables should be eaten every day.
6. Is the client eating enough protein? Note if it is animal or plant protein. Note if lack of protein corresponds to drops in mood or low energy.		Proteins help stabilize energy and balance mood and should be emphasized during the daytime hours. Animal protein has a better complement of amino acids. Plant

Question	Answer	Goals and Recommendations
		proteins need to be carefully combined to achieve adequate amino acid levels.
7. Is the client eating enough fats? Note if lack of fats corresponds to mood shifts or lack of satiety.		Fats help stabilize energy and balance mood and increase satiety. They should be raw or cold pressed and emphasized during the daytime hours.
8. How many servings of starchy carbohydrates is the client eating and at what times of day?		During the day starchy carbohydrates are best when combined with protein to stabilize blood sugar. Starchy carbohydrates can be emphasized in the evening for relaxation.
9. What is the quality of the food the client is eating (freshly prepared vs. canned or prepackaged foods)? Are there additives, dyes, and sugars added?		Recommend whole, fresh, organic foods over packaged and canned foods. Frozen vegetables and fruits are acceptable alternatives.
10. Is the client eating enough soluble fiber?		Soluble fiber is found in foods like oat bran, nuts, beans, lentils, psyllium husk, peas, chia seeds, barley, and some fruits and vegetables. Men should be eating at least about 38 grams/day, and women 25 grams/day.
11. Is the client eating enough insoluble fiber?		Insoluble fiber is found in wheat bran, corn, whole grains, oat bran, seeds and nuts, brown rice, flaxseed, and the skins of many fruits and vegetables. Recommend eating up to 25 grams/day.

Appendix C

Practitioners Working in the Field of Nutrition

The following practitioners can serve as resources and referrals for collaboration and for prescribing nutritional programs. At the end of this appendix a table summarizes the credentials, training, and approach for each professional, which you can share with clients who want to explore their options.

Nutritional Counselors and Therapists

These include certified clinical nutritionists, certified nutritional consultants, certified nutritionists, and board-certified physician nutrition specialists (medical professionals with specialized training in nutrition).

Nutritional counselors work with people to assess their nutritional needs and make recommendations for dietary changes to improve health and well-being. A nutritionist has specific nutritional training but is not a registered dietitian (RD). Regulation of the terms “nutritionist” and “nutritional counselor” varies from state to state.

The Nutritional Therapy Association (NTA) offers a program that trains nutritional therapy practitioners (NTPs) and nutritional therapy consultants (NTCs) with a holistic approach and the philosophy that poor nutrition is behind many of today’s health problems and that each individual has unique dietary needs.

Nutritional Therapy Association Website:
http://nutritionaltherapy.com/

The National Association of Nutrition Professionals (NANP) provides a list of a range of continuing education and graduate degree programs.

Website: http://nanp.org/
Link for state requirements: https://nanp.org/legislative-affairs/

Registered Dietitians

Registered dieticians (RDs) can help manage and prevent chronic illness, provide sports nutrition and culinary education, assist with presurgery and postsurgery nutrition, help with eating disorders, lead community efforts to improve food resources, provide guidance with prenatal and perinatal nutrition, and assist with healthy food and nutrition for the elderly. RDs administer medical nutrition therapy in which they review a person's eating habits, review the individual's nutritional health, and create a nutritional treatment plan that is personalized for the individual. Often, though not always, the course of study promotes conventional nutritional guidelines rather than more progressive ones, and thus one should explore the approach taken by the dietician.

RDs are required to have a bachelor's degree with courses on the disease process, food chemistry, food service systems management, physiology, sociology, and biology. The coursework must be approved by the Academy Accreditation Council for Education in Nutrition and Dietetics. Many RDs also have advanced degrees. RDs are also required to complete an internship and pass a national exam with the Commission on Dietetic Registration. They are also required to receive continuing education. RDs have limits on what they can do, but they often work in healthcare facilities, hospitals, and private practice facilities, or HMOs as part of a medical team. Physicians often refer patients to RDs for nutritional therapy. To find an RD in your area, go to the website for the Academy of Nutrition and Dietetics at http://www.eatright.org and then click on "Find a Registered Dietitian."

The Integrative Functional Nutrition Academy provides post licensure education to RDs in functional nutrition:
https://www.ifnacademy.com/

Naturopathic Physicians

Naturopathy is a holistic medical system that is guided by the major principle of the healing power of nature (*vis medicatrix naturae*). It is a blend of natural medicine and allopathic medicine. Naturopathic doctors

(NDs) are licensed as primary care physicians in some states in the United States (see below). Naturopathic practice includes the following diagnostic and therapeutic modalities: clinical and laboratory diagnostic testing, nutritional medicine, botanical medicine, physical medicine (including manipulative therapy), counseling, minor surgery, homeopathy, acupuncture, prescription medication, and obstetrics (natural childbirth).

There are seven accredited Naturopathic Medical Schools in North America; each provides a low-cost clinic in which physicians complete their training as interns and residents. Some insurance policies will pay for naturopathic services. NDs are licensed to diagnose and prescribe medicine. Unless they specialize in mental health, they generally have basic training in mental illness medications as well. Their training is a minimum of a four-year program that includes the first two years of basic sciences of a medical doctor (MD) education, with the last two years focused on natural, alternative, and preventative medicine. They are required to take board certification exams to obtain state licenses.

Collaborate with an ND to prescribe dietary changes that also include the use of nutrients, glandulars, and reducing or eliminating pharmaceutical drugs. The certifying body is the American Association of Naturopathic Physicians and can be a source of referrals. Follow this link to identify what states license naturopathic physicians: https://naturopathic.org/page/scopeforpatients.

Please note: Licensed naturopathic physicians (NDs) should not be confused with naturopath, naprapath, or unlicensed naturopathic practitioners who also practice naturopathic methods but are not licensed by the state.

American Association of Naturopathic Physicians Website:
https://www.naturopathic.org

Functional Medicine Practitioners

Functional medicine uses a systems-oriented and patient-centered approach, addressing the patient as a whole person. Practitioners of functional medicine take extensive patient histories and take time to understand an individual’s unique health needs. They draw from Western and complementary/alternative medicine focusing on science-based prevention and treatments for body, mind, spirit, lifestyle, family, career, and the

environment. To become a functional medicine practitioner, you must already have graduated from an accredited osteopathic, medical, chiropractic, nursing, physician assistant, dentistry, naturopathic, dietetics, pharmacy, acupuncture, or nutrition program; complete a series of courses in functional medicine; and pass written examinations.

Institute for Functional Medicine: https://www.ifm.org/

Integrative Medical Practitioners

Integrative medicine draws on both allopathic and complementary/alternative medical practices. It is often evidence based and takes into account the patient as a whole person and the relationship between the practitioner and the patient, and it uses all available therapies that may help in the treatment of a client.

The American Board of Physician Specialties certifies integrative medical doctors once they have successfully passed the integrative medicine board certification exam. To take the exam, you must have an MD or DO degree and have received training specifically in integrative medicine, acupuncture, naturopathy, or chiropractic education.

American Board of Integrative Holistic Medicine (ABIHM): https://aihm.org/

National Center for Complementary and Integrative Health: https://nccih.nih.gov/

Health Coaches

A health coach supports, educates, mentors, and serves as a role model to motivate individuals, couples, families, and communities to explore and enact positive health choices. A variety of health coach training and certification programs exist, and training credentials can vary.

The Institute for Integrative Nutrition combines motivational interviewing types of strategies with nutritional education: https://www.integrativenutrition.com/health-coaching-certificates

Duke University has a program in integrative health coaching: http://www.dukeintegrativemedicine.org/patient-care/integrative-health-coaching

Osteopathic Physicians

Osteopathy is a comprehensive medical system that focuses on disease prevention while using the technology of modern medicine to diagnose and treat illness. It is holistic, looking at the patient as a whole person and not just treating isolated symptoms. Osteopathic physicians (DOs) are fully trained physicians like MDs and are able to perform surgery and work with prescription drugs. They also emphasize nutritional therapies and manipulative therapies such as cranial osteopathy. They are also trained in a specialty, such as surgery, psychiatry, or pediatrics. Examinations to receive state licenses are required for DOs to practice. DOs are more likely to practice primary care specialties and also receive additional training on the musculoskeletal system and osteopathic manipulative medicine, so they use their hands and palpation skills to aid in their diagnoses and treatments.

American Osteopathic Association Website:
http://www.osteopathic.org

Traditional Chinese Medicine and Acupuncturists

Practitioners of traditional Chinese medicine (TCM) and acupuncturists prescribe individualized diets for the whole person. They take a comprehensive history and conduct a thorough assessment that includes pulse taking, tongue reading, and facial diagnosis. The Chinese nutritional approach is based on having a balance of the five tastes (spicy, sour, bitter, sweet, and salty) and six food groups (meats, dairy, fruit, vegetables, grains, and herbs and spices). Chinese medicine also incorporates the concepts of yin and yang to nutrition and recommends different foods for different times of year. For example, the summer is a more active, or yang, time of year, and so to create balance one would eat more grounding, yin foods. Foods are recommended based on their ability to balance conditions of heat, dampness, coldness, dryness, moistness, or an excess or deficiency of yin or yang.

Acupuncture is a TCM approach to healing. Oriental medical practitioners and acupuncturists receive at least master’s level training in an accredited 3- to 4-year program and must pass certification examinations. Other healthcare practitioners may also receive abbreviated training (in some states) in acupuncture detoxification protocols enabling them to treat a limited number of points on the body to address addictions.

American Association of Oriental Medicine Website: https://www.aaaomonline.org/
National Association of Detoxification Acupuncture Website: http://www.acudetox.com/

Traditional Medicine Healers and Practitioners

Traditional medicine involves ways of healing that are passed on from one generation to the next, among families and healers, and is based on indigenous, practical, and observational arts and sciences. Medicinal plants, animals, foods, the elements, rituals, spirit ways, and touch are all part of the earth's gifts that make up traditional medicine. Traditional medicine is the property of the communities and nations that it originates from, emphasizes restoration of balance and prevention of causes, and requires the vital preservation of the culture and natural resources of its origin. Traditional medicine exists in every culture and is based on the knowledge acquired over many thousands of generations of observation and learning. Traditional medicine contributes many methods to what is now called "complementary" and "alternative medicine."

Center for Traditional Medicine: http://centerfortraditionalmedicine.org/
Center for World Indigenous Studies: http://cwis.org/
World Health Organization: http://www.who.int/en/

Practitioners Working in the Field of Nutrition

Practitioner	What They Do	Approach	Education
Functional medicine practitioner	Patient histories Individual health needs Prevention	Western and alternative medicine Systems oriented Patient centered Practitioner–patient relationship Science based	Graduation from an accredited program Completion of functional medicine courses Examinations

Practitioner	What They Do	Approach	Education
Integrative medicine practitioner	Practitioner–patient relationship Use all available therapies	Evidence based Holistic Allopathic and alternative medicine	Certification exam Could be an MD or DO, RN/ARNP, or PA and have received specific training
Naturopathic physician	Holistic primary care Diagnosis Prescriptions Testing Nutrition Botanicals Physical medicine Counseling Minor surgery Homeopathy Acupuncture Intravenous and injection therapy Naturopathic obstetrics (natural childbirth)	Holistic The healing power of nature Natural and allopathic medicine	Four-year program Two years of basic MD medical sciences Two years natural, alternative, and preventative medicine Board certification exams required to obtain state licenses Basic training in mental illness medications
Nutritional counselors and therapists	Nutritional assessment Dietary recommendations Health coaching Meal planning Cooking instruction	Holistic Philosophy: poor nutrition is behind many of today's health problems Each individual has unique dietary needs	Nutritional therapy consultant (NTC): 9 months of training Nutritional therapy practitioner (NTP): 9 months of training, hands-on functional evaluation training
Osteopathic doctors	Nutritional therapies Manipulative therapies such as cranial osteopathy Psychiatry Pediatrics Prescriptions Surgery	Comprehensive medical system Disease prevention Modern medicine Holistic	Fully trained physicians Examinations to receive state licenses are required
Registered dietitians	Nutritional therapy Personalized nutritional treatment plan Manage and prevent chronic illness	Medical nutrition Sometimes hospital/institution based Some people who begin as RDs	Bachelor's degree in a related subject required Coursework approved by the Academy

Practitioner	What They Do	Approach	Education
	Sports nutrition Culinary education Presurgery and postsurgery nutrition Eating disorders Community efforts Prenatal and perinatal nutrition Nutrition for the elderly	expand into holistic approaches	Accreditation Council for Education in Nutrition and Dietetics Internship required Must pass a national exam with the Commission on Dietetic Registration Continuing education required
TCM practitioners, acupuncturists	Individualized diets Comprehensive history Assessment includes pulse taking, tongue reading, and facial diagnosis Acupuncture Herbal therapies	Holistic Alternative medicine	Master's level training in an accredited 3- to 4-year program required Certification examinations
Traditional medicine healers and practitioners	Medicinal plants Medicinal foods Rituals Spirit ways Touch	Complementary and alternative medicine Indigenous, practical, and observational arts and science Emphasizes restoration of balance and prevention of causes	Knowledge acquired over many thousands of generations of observation and learning Passed on from one generation to the next

Appendix D

Guided Visualization and Palpation for Digestion

Sample selection from guided digestion scan:
https://www.youtube.com/watch?v=Z7gF4m-CyNI&t=61s

Purpose

This is a valuable process to undertake with individuals working on improving and restoring their digestion. You can read this aloud in the office live, or you can ask if the client would like you to make a recording. The client may also benefit from making their own recording in their own voice. Discuss this with your client to decide which approach will be most helpful.

Instructions

Recording

When you record this, do so at a slow pace. It's helpful to follow instructions yourself as you read them for the recording. This will provide you with the appropriate pace at which you should read. Feel free to make any adjustments, additions, or deletions that might be appropriate for each individual client.

Reviewing Visuals in Advance

It is helpful to review an image of the digestive system prior to this exercise, so that you and your client have a visual image linking the names and organs. This will assist the visualization process. Figure D.1 is an example.

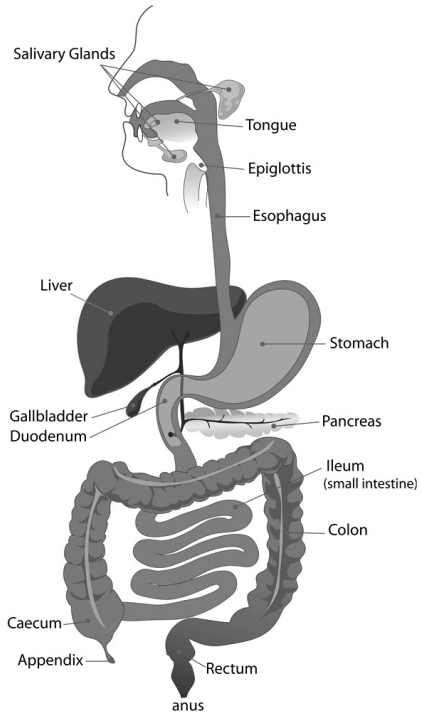

FIGURE D.1. The human digestive system. Credit: Mariana Ruiz (LadyofHats)

Follow for extended description

When Conducting This Live

When doing this live, you may prompt your client to stop at any moment they come upon distress, discomfort, a state-dependent memory, or something they would like to stop, process, and share more about.

Visualization Script

Record or read the following visualization script:

As you prepare for this powerful exploration of your digestive system, your second brain, and your gut, remember that if you find your attention being drawn to sounds or sensations around you or if you begin to feel distracted, just note the thoughts or distractions and then ever so gently invite your attention back toward awareness of your body sensations and your process. This process has no right or wrong; it is just what feels right for you.

To begin, find a comfortable position. Either sit upright with the soles of your feet stable on the ground beneath you or lay down with your arms and legs extended.

Start by taking a couple of deep breaths, in through your nose and out through your mouth. Air will fill your lungs, and your chest will rise and then fall again.

Feel your body relaxing with every breath that leaves your body. Maybe you want to close your eyes—if not, that is also perfectly fine, whatever works best for you.

Slowly breathing in and out . . . let out a deep sigh, letting the air, and all the tension and stress, flow out of your body. Feel your body become heavy, settling deeper and deeper into your position.

Are you noticing some parts of your body more than others? Are there feelings of tension, maybe even pain? Whatever the sensation, note it, make room for it, and feel it changing with every breath. And then slowly, with every new breath, return your attention to your whole body.

Feel the muscles in your chest and stomach release the day's built-up tension. You are breathing in and breathing out.

Feel the muscles in your back release and get more comfortable with every breath—breathing in and breathing out.

Feel your arms and legs become heavy with every breath. You are breathing in and breathing out.

Feel your shoulders and neck soften, allowing the stress to float away with every breath—breathing in and breathing out.

Feel the tension in your face, forehead, and jaw, and with every out-breath, let it leave your body, slowly drifting away. Breathe in and breathe out.

Slowly let your breathing return to its normal rhythm. There is no need for control; let your body guide you. Breathe in and breathe out.

Give yourself a moment to notice the sensations around you. Are there any smells in your immediate surroundings that are drawing your attention? Whatever there may be, allow yourself to witness it without focusing too much on anything specific. Just make a mental note of whatever you are observing, accept it as a part of your experience, and then slowly direct your attention to breathing in and breathing out.

Tune in to the air flowing through your nose with your next in-breath. As you inhale, pay attention to the sensation at the tip of your nostrils as the air rises gently, touching your delicate nose tissue; as you inhale and exhale, marvel at this moment-to-moment awareness with every breath you take. If

you like, imagine the scent of a freshly cut lemon, rose water, or any favorite edible aroma. You are breathing in and breathing out.

Follow the scent from your nose down to your mouth, the tongue, and the salivary glands: Can you feel your salivary glands excrete, preparing for a drop of lemon juice on your tongue? Or if you chose another aroma, note how it may cause a physical sensation.

Now, turn your focus on how your mouth feels. Feel free to wiggle your tongue a little. Is your tongue heavy? Do you feel tension in your jaw? Open and close your jaw a little, feeling the hinge called the temporomandibular joint (TMJ), loosen, open, loosen, and release. Explore that feeling. Gently release the tension you are holding. Let it leave your body with every breath.

Is there something else that you are noticing? Whatever your sensation, take note of it and gently direct your attention back to your mouth.

Thank your tongue for facilitating the movement of your food, allowing you to taste it, and enabling you to speak. Thank your salivary glands for producing saliva, which helps you digest your carbohydrates and maintain a healthy mouth microbiome.

Now, take a moment to swallow gently a few times. How does it feel? Are you noticing any tension? Give yourself a moment to witness the act of swallowing entirely.

Take note of any sensations, accept them as part of your experience, and gently release any tension you are holding. Let any tension leave your body with every breath as you relax.

As you swallow, allow your mind’s eye to travel down your esophagus.

As you travel down, come to the end of your esophagus, where you have the esophageal sphincter. This is a little gate that meets the stomach. It opens to let food into the stomach and closes to keep stomach acid from backing up. Thank your esophagus for transporting the food down to your stomach. This gate or sphincter should be closed most of the time. If you have digestive problems like acid reflux, also called heartburn, let your sphincter know how much you care for it, and ask your sphincter now to close and protect you from acid rising up. Let your sphincter know you will take good care of digestion to help it do its job even better. Visualize this change with your breath. You are breathing in and breathing out.

Next, try softly placing your hand at the tip of your sternum. This is also called the breastbone. You can follow this bone down from the center of

your breast and feel it until you reach the end, where it gets a little softer. Is there any pain or tension? How would you describe the sensation? Are you getting a message? Gently say hello to this vital center of digestion and power in the body.

Take note of any sensations, accept them as a part of your experience, and gently release any tension you hold. Let it leave your body with every breath as you continue to relax.

Now, gently place your hand under your right rib. This is your liver. Tune into it. How is it doing? Do you feel any tension here? Visualize your liver. If you want, you can give it a gentle massage. It may feel full or even tender. Let yourself explore feeling under the rib and even contacting the diaphragm.

Take note of any sensations, accept them as a part of your experience, and gently release any tension you are holding. Let it leave your body with every breath as you continue to relax.

Thank your liver and gallbladder for all their fiery work digesting fats, breaking down toxins, and processing your foods' nutrients.

Now, put your left hand under your left rib cage on the stomach and feel for your stomach. Take a deep breath. Do you feel any tension or pain?

Now, tune into your stomach. How is it feeling?

Place both hands on your upper abdomen. Do you have gas, bloating, or burning?

Let your stomach relax and hang out. Feel your breath flow in and out of your stomach. Visualize your stomach resting underneath your palms.

Take note of any sensations, accept them as a part of your experience, and gently release any tension you hold. Let it leave your body with every breath as you continue to relax.

Thank your stomach for holding the food while it gets mixed with its enzymes and acids that allow the breakdown process.

Your stomach connects to the pyloric sphincter, another gate that opens to let food into the small intestine. Let your hand follow your stomach and travel to this gate, letting your hand rest, allowing the warmth and energy to bring healing and relaxation as you breathe in and out.

When you are ready, let your hand find your belly button. Gently place your flat hand on and cover all around your belly button. Let your hand draw a box about two inches around your belly button in every direction as you gently feel your small intestine: pressing slightly, exploring, feeling,

inviting breath into this area as you travel the pathway through your small intestine. Visualize wandering round and round through this maze that does amazing work.

Are you noticing any tension, restriction, or tightness on your way?

Take note of any sensations, accept them as part of your experience, and gently release any tension you are holding. Let it leave your body with every breath as you continue to relax.

Thank your small intestine for digesting and absorbing almost all the nutrients from the foods you eat into the bloodstream. Thank your intestines for creating the enzymes that make this possible and for helping your garden grow lots of chemicals that lift your spirits and soothe your stresses.

Take a moment to trace a diagonal path from your belly button to the middle of your lowest left rib with your left hand. You will go back toward your stomach area but just below and to the left. You can sense your powerful pancreas about three-quarters of the way up from the belly button and your rib. Let your hand and mind's eye rest gently there.

Take note of any sensations, accept them as a part of your experience, and gently release any tension you are holding. Let it leave your body with every breath as you continue to relax.

Thank your pancreas for creating all the enzymes that break down sugars, fats, and starches you consume and for secreting the hormones that balance your blood sugar levels.

Let your hands travel again and find where your small intestine meets your large intestine. Place your hand halfway between your belly button and the middle of your right hip bone to locate this.

This is the ileocecal valve. It often feels a little tender. That's okay—it works hard! This valve or gate opens to let food pass through to the large intestine but stays closed to keep it from going in the wrong direction. As you breathe, let this valve know it is in balance, doing an excellent job for your health and releasing any tension or pain. As you breathe, gently massage it and gently release any tension you are holding. Let it leave your body with every breath as you continue to relax. Thank your ileocecal valve.

Next, leave the ileocecal valve and let your fingers and visualization travel up ascending colon. You can follow along with your hand by gently moving from the ileocecal valve upward on the right side of your body until you arrive at your ribs.

Visualize traveling up your ascending colon. Take note of any feelings of tension or constriction here. Accept them as part of your experience, and then gently release any tension you are holding. Let it leave your body with every breath as you continue to relax.

Let your mind's eye move through the transverse colon across the width of your abdomen, checking for any sensations of tension. Breathe in and breathe out.

Continue traveling down the descending colon, breathing in and breathing out.

You may feel tension or fullness, perhaps a pocket of gas. Whatever it may be, just keep breathing and releasing, allowing your sensations to come and go without holding onto them. Know that your hands are healing hands, filled with energy and warmth.

Thank your large intestine for absorbing water and salts from food matter and removing the waste materials.

As you come down the descending colon, you reach the final section called the sigmoid, which then leads into the rectum. What do you feel? This is the area where we store waste until it is released. Check in, let yourself feel any congestion, and remind yourself you will respond to any sensations to release waste when needed. Thank your rectum for receiving the matter to be discarded, notifying you when feces are to be evacuated, and holding them until this happens.

Finally, check in with your rectum. This is another sphincter that can get tight when we feel uptight. Wiggle your anus, say hello, and let your rectum know to relax if it's feeling contracted. Notice if you are clenching and allow it to rest. You are breathing in and breathing out.

Thank your rectum for allowing the body waste to be discarded and for keeping you continent while sleeping or until you need to release its contents.

Having arrived at the end of your digestion journey, give yourself another moment to check in with your breath and revisit any areas where you felt tension. Did anything change?

Remember that caring for your gut means caring for your thoughts and feelings. Notice sensations as messages from your deepest self to your conscious self. For this reason, it is called the second brain.

When you feel ready, slowly open yourself up to your surroundings, taking in the different sensations. If you had your eyes closed, feel free to

open them now.

Remind yourself that you can return to any of these areas anytime.

Following this exercise, take some time to process your experience. Perhaps write down some notes about sensations, images, and feelings, pleasant or unpleasant.

Thank you for exploring with me today. We can next discuss your experiences doing this exercise. I suggest doing this exercise weekly to explore the ways in which your digestion is changing and your health improving. Let’s plan to discuss this each time we meet to see what adjustments we might make together.

Appendix E

Castor Oil Packs

Purpose

This old folk remedy helps draw out toxins from the body. The compresses are beneficial when applied to the liver, digestive organs, and areas of pain. They are also used to stimulate the lymphatic system. Topical castor oil (from the plant *Ricinus communis*) is anti-inflammatory due to ricinoleic acid that penetrates the skin.

Directions

Soak a washcloth, towel, a small piece of flannel, or other natural cotton cloth in castor oil and apply it to the abdominal area, over the liver, or to areas of pain and inflammation. Place a towel over the flannel, and you can place a hot water bottle (filled with hot water) over the towel and lie in bed until the water cools.

Keep the compress in place for 60–90 minutes. Avoid use of a heating pad if possible. Make sure you do not burn yourself with the hot water bottle. Castor oil is thick and messy, so have a towel on hand to wipe the extra oil off the skin. Wash the oil off your skin when you are finished.

The castor oil poultices can be applied as often as you need relief or every evening for 30 days, as they are not harmful. Use the flannel a few times before washing; refresh with new castor oil.

Appendix F

Bristol Stool Scale

The Bristol Stool Scale classifies seven types of stool:

- **Type 1:** Separate hard lumps resembling nuts or rabbit droppings—indicates severe constipation, as the stool has spent an extended period in the colon, resulting in excessive water absorption.
- **Type 2:** Sausage-shaped but lumpy but still hard and difficult to pass—may also indicate constipation, although it's slightly less severe than Type 1.
- **Type 3:** Like a sausage but with cracks on the surface—indicates a healthy bowel movement, suggesting a balance between stool consistency and transit time in the colon.
- **Type 4:** Like a smooth, soft sausage or snake—considered the ideal stool consistency, indicating a healthy bowel movement with optimal hydration and transit time.
- **Type 5:** Soft blobs with clear-cut edges, easy to pass—also considered normal, although slightly looser than Type 4.
- **Type 6:** Fluffy pieces with ragged edges, a mushy stool—indicates mild diarrhea, as the stool has passed through the colon quickly, resulting in less water absorption.
- **Type 7:** Watery, entirely liquid, with no solid pieces—indicates severe diarrhea, as the stool has rapidly passed through the colon with minimal water absorption.

Appendix G

Client Intake Form

Client Name: _____
Date _____

Client Information

Address:
_____
_____

City: _____ State: _____ Zip: _____

Phone: _____ Additional Phone: _____

E-mail:
_____
__

What form of communication do you prefer? ☐ Video call ☐ Phone call ☐ Email ☐ Text

Date of birth: _____ Gender: _____ Pronouns: _____

Employer: _____
Occupation:_____

Marital status: ☐ Single ☐ Married ☐ Partnered ☐ Divorced ☐ Separated ☐ Widowed

Spouse/partner name: _____

Emergency Contact

Name: _____

Phone: _____
Additional Phone: _____

Other Health Providers

List any health providers you are currently seeing.

Name: _____
Phone: _____
Email: _____

Name: _____
Phone: _____
Email: _____

Name: _____
Phone: _____
Email: _____

I give my therapist permission to consult with these healthcare providers regarding my health and treatment. ☐ Yes ☐ No

Comments:

_____

_____

_____

Signature: _____
Date: _____

Blood Tests

Along with this intake form, please submit the following tests, which a primary care physician can authorize:

☐ Comprehensive metabolic/blood tests

☐ Vitamin D

☐ Other: _____

If you don't have current tests (within the previous 3 months), we can discuss making arrangements for these tests.

Animal Therapy

☐ I welcome working with a therapy animal in the office.

☐ I prefer not to work with a therapy animal in the office.

I am allergic to:

☐ Dogs ☐ Cats ☐ Other: _____

Current Health Information

Height: _____ Weight: _____

Ethnic identity(ies): _____

Natural hair color: _____

Do you use hair dye? ☐ Yes ☐ No

Do you use a special shampoo? ☐ Yes ☐ No

Health Concerns

Primary: _____

☐ Mild ☐ Moderate ☐ Disabling ☐ Constant ☐ Intermittent

Do your symptoms get better or worse with more activity?

☐ Get worse ☐ Get better ☐ No change

Do your symptoms get better or worse with less activity?

☐ Get worse ☐ Get better ☐ No change

Treatment received: _____

_____

Secondary: _____

☐ Mild ☐ Moderate ☐ Disabling ☐ Constant ☐ Intermittent

Do your symptoms get better or worse with more activity?

☐ Get worse ☐ Get better ☐ No change

Do your symptoms get better or worse with less activity?

☐ Get worse ☐ Get better ☐ No change

Treatment received: _____

_____

Have you ever received energy therapy before?

☐ Yes ☐ No Frequency: _____

Have you ever received manual/massage therapy before?

☐ Yes ☐ No Frequency: _____

Have you ever received psychotherapy before?

☐ Yes ☐ No Frequency: _____

What kinds of practitioners have you worked with around food, diet, and nutrition? (Include both formal and informal practitioners, e.g., a dietitian, health coach, or nutritional therapist.)

_____

_____

List all conditions currently monitored by a healthcare provider.

_____

_____

Daily Activities

Work hours and schedule:_____

_____

Do you now, or have you ever, worked the night shift? ☐ Yes ☐ No

If so, please explain: _____

If currently, what are your hours? _____

Check any of the following activities that are affected by your condition(s):

☐ Sleep ☐ Washing ☐ Dressing ☐ Fitness

☐ Other home/family activities:

_____

☐ Other social/recreational activities:

_____

How do you reduce stress?

_____

_____

_____

_____

How do you reduce pain?

_____

_____

_____

_____

What are your health goals?

_____

_____

_____

_____

Health History

Include dates and treatments. Add pages if necessary.

Surgeries: _____

_____

_____

Accidents: _____

_____

_____

Major illnesses: _____

_____

_____

If Applicable

Last Pap smear: _____

First day of last menstrual period: _____

Marital/partner history (years married): _____

Number of children: _____

Ages of children: _____ Number of pregnancies:
_____

Complications: _____

_____

Abortions or miscarriages:
_____

_____

Use of contraceptive: ☐ Yes ☐ No Type(s):
_____

Trauma History

A history of trauma affects both physical and emotional health. This is why it is important for me to understand your trauma experiences. However, if you do not feel comfortable sharing them on paper or with me verbally, I understand. Please feel free to omit this section. If you find that in the future you would like to share your experiences, I am always open to listening and responding to what will be beneficial for you.

Please describe your trauma history as best as you can, providing your age at the time of the trauma and the type(s) of trauma or adverse event(s) you experienced. Include anything you want me to know.

_____

_____

_____

_____

_____

_____

Have you ever been diagnosed with PTSD, complex trauma, or borderline personality disorder?

_____

_____

_____

_____

Have you ever experienced head trauma (e.g., concussion, sports injuries, whiplash)?

_____

_____

_____

_____

□ I feel comfortable discussing my trauma history with you.

□ I do not feel comfortable discussing my trauma history with you at this time.

Exercise Activities

Please list each type of exercise that you do. For each activity, indicate the amount of time you typically spend doing each activity and how frequently.

Exercise Activity	Time Spent (Hours/Minutes)	Frequency (Number of Times per Week)

Family Medical History

For each relative, please give their age and list any illnesses. If they are deceased, include the cause of death and age of death.

Mother: _____

_____

_____

Father: _____

_____

_____

Siblings: _____

_____

_____

Maternal grandparents: _____

_____

_____

Paternal grandparents: _____

_____

_____

Current Dietary Habits

Please list any specific diets that you are currently following (e.g., vegan, vegetarian, Atkins, paleo, DASH, raw, GAPs):

_____

_____

Allergies and Sensitivities

☐ Wheat allergy ☐ Dairy allergy ☐ Mold allergy

☐ Wheat sensitivity ☐ Dairy sensitivity ☐ Chemical sensitivities

Please list any other known or suspected food allergies and sensitivities:

_____

_____

_____

_____

Are there foods you could not give up? If so, which ones?

_____

_____

_____

Current Food Preparation Methods

Who's doing the shopping? ☐ You ☐ Family member ☐ Friend ☐ Other

Do you typically eat with other people or alone? ☐ People ☐ Alone

How often do you eat out?

☐ Never ☐ Less than once a month ☐ Monthly ☐ Twice monthly

☐ Weekly ☐ Daily

What kind of places do you eat out at?

_____

_____

_____

Do you prepare your own food? ☐ Yes ☐ No

Do you enjoy cooking? ☐ Yes ☐ No

How do you feel about food preparation and cooking?

_____

_____

_____

How much time do you spend preparing food each day?

☐ None ☐ 1 hour ☐ 2 hours ☐ 3 or more hours

Eating Behaviors

Briefly describe your mealtime and snack patterns:

_____

_____

_____

Meaning of Food

Please describe in a few sentences what food means to you. There may be both positive and negative associations. There is no right or wrong answer. For example, is food important to you? Are you preoccupied with it? Does it feel nourishing? Does food cause fear or discomfort?

_____

_____

_____

Childhood History

Were you breastfed? ☐ Yes ☐ No If so, until age: _____

Were you fed formula as a baby? ☐ Yes ☐ No

Did you experience ear infections as a child? ☐ Yes ☐ No

Have you used antibiotics as a child or adult? ☐ Yes ☐ No

Please list any other childhood illnesses and the age at which they occurred:

_____

_____

_____

Digestive Problems Currently, During Childhood, and During the Teen Years

Please list any digestive complaints you recall having as a child (e.g., stomach pains, diarrhea, constipation, gas):

_____
_____

_____

_____

_____

Please list any other physical complaints you recall as a child (e.g., fatigue, headaches, pain):

_____

_____

_____

Did you have acne as an adolescent? ☐ None ☐ Mild ☐ Moderate ☐ Severe

History of Fasting, Purging, History of Binging/Purging

Do you have a history of fasting? ☐ Yes ☐ No

Did you experience any eating disorders during adolescence? ☐ Yes ☐ No

If so, please describe:_____

_____

_____

_____

For any of the childhood issues you described above, please note if they were resolved, or if they are current. If they are current, how have the symptoms changed?

_____

_____

_____

_____

History of Meals, and Mealtime, Current and in the Past

Briefly describe your family's eating habits and mealtimes. Did you eat together as a family? Did you eat at the table or in front of the television? Did you fend for yourself? Were foods prepared from packages? Was there fighting at mealtime?

_____

_____

_____

_____

_____

Medications (Current and Past Use)

Please list any medications, including pharmaceuticals and antibiotics, that you are currently taking or have previously taken.

Medication	Prescribed For	Dosage	Frequency	Dates/Duration
E.g., Wellbutrin	*Depression*	*100 mg*	*2/day*	*2010–present*

Please note here any side effects you have experienced from any of the listed medications:

_____

_____

Use of Nonpharmaceutical Substances

	Current	Past	Times per week	Comments
Tobacco	☐	☐		
Alcohol/drugs	☐	☐		
Caffeine	☐	☐		
Other: _____	☐	☐		

Are you in recovery from substance use disorder? ☐ Yes ☐ No

Do you have a history of drug or alcohol abuse? ☐ Yes ☐ No

Long-term use of prescription drugs: ☐ Yes ☐ No

If yes, how often and in what form?

_____

_____

_____

Long-term use of recreational drugs: ☐ Yes ☐ No

If yes, how often and in what form?

_____

_____

Do you use artificial sweeteners? ☐ Yes ☐ No

Type: _____

_____

Use of Nutritional Supplements/Herbs/Minerals

Please list any supplements—including vitamins, minerals, herbs, amino acids, and hormones—that you are currently taking or have previously taken.

Supplements	Manufacturer	Dosage	Frequency	Dates/Duration
E.g., Vitamin C	Biotics Research	*500 mg*	*2/day*	*2012–4 months*

Supplements	Manufacturer	Dosage	Frequency	Dates/Duration

Detoxification

Please list any detoxification methods that you are currently using or have used previously. Such methods include skin brushing, coffee enema, liver flush, juice fast, colon cleanser, Epsom salt (magnesium sulfate) bath soak, salt and baking soda bath, vinegar bath, sweats or saunas, castor oil packs, and master cleanse.

Method	Frequency	Dates/Duration	Desired/Perceived Benefits

Pain/Discomfort

Please check off each area of pain and describe the experience of that pain (Figure G.1).

FIGURE G.1. Where do you feel pain in your body? Credit: iStock.com/cosmin4000

Rate your stress level as of today:

1 ——————————————————————————— 10

Low **High**

Current and Previous Health Conditions

Check all current and previous health conditions (please explain).

General

CURRENT	PAST	COMMENTS
☐	☐	headaches _____
☐	☐	sleep disturbances _____
☐	☐	fatigue _____
☐	☐	infections in the ears _____
☐	☐	fever _____
☐	☐	sinus problems _____
☐	☐	other _____

Skin Conditions

CURRENT	PAST	COMMENTS
☐	☐	rashes _____

☐	☐	athelete’s foot, warts _____
☐	☐	other _____

Allergies

CURRENT	PAST	COMMENTS
☐	☐	scents, oils, lotions _____
☐	☐	mold, pollen, dander _____
☐	☐	detergents _____
☐	☐	airborne allergies, hives _____
☐	☐	sinus congestion _____
☐	☐	other _____

Muscles and Joints

CURRENT	PAST	COMMENTS
☐	☐	rheumatoid arthritis _____
☐	☐	osteoarthritis _____
☐	☐	scoliosis _____
☐	☐	broken bones _____
☐	☐	spinal problems _____
☐	☐	disk problems _____
☐	☐	lupus _____
☐	☐	TMJ, jaw pain _____
☐	☐	spasms, cramps _____
☐	☐	sprains, strains _____
☐	☐	tendonitis, bursitis _____
☐	☐	stiff or painful joints _____
☐	☐	weak or sore muscles _____
☐	☐	neck, shoulder, arm pain _____
☐	☐	low back, hip, leg pain _____
☐	☐	other _____

Nervous System

CURRENT	PAST	COMMENTS
☐	☐	head injuries, concussions _____
☐	☐	dizziness, ringing in the ears _____
☐	☐	loss of memory, confusion _____
☐	☐	numbness, tingling _____
☐	☐	sciatica, shooting pain _____
☐	☐	chronic pain _____
☐	☐	depression _____
☐	☐	chronic fatigue/fibromyalgia _____
☐	☐	other _____

Respiratory, Cardiovascular

CURRENT	PAST	COMMENTS
☐	☐	heart disease _____
☐	☐	blood clots _____
☐	☐	stroke _____
☐	☐	lymphedema _____
☐	☐	high, low blood pressure _____
☐	☐	irregular heart beat _____
☐	☐	poor circulation _____
☐	☐	swollen ankles _____
☐	☐	varicose veins _____
☐	☐	chest pain, shortness of breath _____
☐	☐	asthma _____
☐	☐	palpable heartbeat in abdomen _____
☐	☐	sinus infections _____
☐	☐	other _____

Digestive/Elimination System

CURRENT	PAST	COMMENTS
☐	☐	bowel dysfunction _____
☐	☐	gas or bloating _____

☐	☐	bladder/kidney dysfunction _____
☐	☐	colitis or Crohn's disease _____
☐	☐	belching within 1 hour of eating _____
☐	☐	bad breath (halitosis) _____
☐	☐	unpleasant body odor _____
☐	☐	feel like skipping breakfast _____
☐	☐	feel better if you don't eat _____
☐	☐	sleepy after meals _____
☐	☐	stomach pains/cramps _____
☐	☐	diarrhea alternating constipation/diarrhea _____
☐	☐	undigested food in stool _____
☐	☐	pain between shoulder blades _____
☐	☐	stomach upset by greasy foods _____

CURRENT	PAST	COMMENTS
☐	☐	nausea _____
☐	☐	light or clay-colored stools _____
☐	☐	gallbladder attacks _____
☐	☐	gallbladder removed _____
☐	☐	hemorrhoids or varicose veins _____
☐	☐	pulse speeds up after eating _____
☐	☐	crave carbohydrates _____
☐	☐	anal itching _____
☐	☐	fungus or yeast infection _____
☐	☐	history of antibiotic use _____
☐	☐	use over-the-counter pain medications _____
☐	☐	other _____

Endocrine System

CURRENT	PAST	COMMENTS
☐	☐	thyroid dysfunction _____
☐	☐	HIV/AIDS _____

☐	☐	diabetes _____
☐	☐	other _____

Reproductive System

CURRENT	PAST	COMMENTS
☐	☐	pregnancy _____
☐	☐	reproductive problems _____
☐	☐	painful, emotional menses _____
☐	☐	fibrotic cysts _____
☐	☐	cancer/tumors _____

Motivation for Making Changes

How would you describe what is motivating you right now to make changes in your lifestyle?

_____

_____

_____

Nutritional Changes

Identify three reasons to improve your diet:

_____

_____

_____

Identify three obstacles to improving your diet:

_____

_____

_____

Identify three goals to improve your diet:

• 3-month goal: _____

• 6-month goal: _____

• 12-month goal: _____

Identify three goals to improving your food preparation:

• 3-month goal: _____

• 6-month goal: _____

• 12-month goal: _____

Perceived Barriers to Making Changes

□ Family: _____

□ Finances: _____

□ Difficulty swallowing pills:
_____

□ Lack of time: _____

□ Belief system: _____

□ Organization abilities: _____

□ Other: _____

Beliefs

Do you have specific religious, spiritual, or cultural beliefs? If so, please describe.

_____

_____

_____

Do you have a religious or spiritual practice? If so, please describe.

_____

_____

_____

Do you have beliefs about why you are experiencing specific health problems?

_____

_____

_____

Other

Is there anything else you want to share with me about your health, well-being, or history?

_____

_____

Appendix H

Additional Recipes

Contents

H.1. Slow Cooker Recipes
H.2. Smoothie Recipes
H.3. Cruciferous Vegetable Recipes
H.4. Grains and Seeds Recipes
H.5. Soaking Legumes and Nuts
H.6. Root Vegetable Recipes
H.7. Fermented Foods
H.8. Salad Dressings

Food Storage Strategies

As a general rule, most foods should be prepared fresh and consumed within 24 hours, as histamine-producing bacteria begin to grow soon after food preparation. While fermented foods are an exception, it's important to note that probiotic bacteria in yogurt and kefir begin to diminish within 24 hours of preparation. Pickled foods, however, can be safely stored for several weeks.

H.1. Slow Cooker Recipes

These three recipes are my go-to recipes for making easy, nourishing, rich-tasting meals. The recipes can be modified as you wish and still taste good. The Sweet Vegetable and Meat Stew is a variation of the traditional Jewish Passover stew called Tzimmes. Because each of these recipes has its own sweet version—dried fruit, balsamic vinegar, white wine, sherry—they are ideal for coming off sweets, carbohydrates, and alcohol addiction.

Sweet Vegetable and Meat Stew

Makes 4–6 servings

Ingredients

- 2 pounds stew meat or inexpensive fatty meat
- 3 medium carrots, peeled and sliced into ¼ inch coins
- 2 bay leaves
- ½ lemon, including peel, pitted and chopped into ½ inch pieces
- ½ juice orange, including peel, pitted and chopped into ½ inch pieces
- ¼ teaspoon cinnamon
- ½ cup mixed dried fruit* (prunes, pears, apricots, and apples), chopped into 1-inch pieces
- 2 cups water

Directions

1. Cut the meat and carrots and place in the slow cooker with 2 cups of water. Cook for 2 hours on high.
2. Add the rest of the ingredients and cook on low for 2 more hours.
2. Serve in bowls.

*Use organic fruit with no sulfites. Make sure you purchase dried fruits without preservatives because the preservatives can be allergenic or exacerbate asthma or breathing difficulties.

Lamb With Balsamic-Glazed Vegetables

Makes 6 servings

Ingredients

- 1 teaspoon salt
- 1 teaspoon freshly ground black pepper
- 1 teaspoon ground coriander
- 2 teaspoons dried rosemary leaves
- 1 teaspoon dried mint
- 1 teaspoon dried thyme
- 1 teaspoon ground fennel
- 3 pounds lamb roast, deboned and well-trimmed of fat
- 1 large red onion, cut into eighths
- 1 large parsnip, diced

2 medium new potatoes, quartered
3 tablespoons balsamic vinegar

Directions

1. Combine the salt, pepper, coriander, rosemary, mint, thyme, and fennel in a small bowl. Rub the seasonings all over the lamb roast.
2. Place the onion in the bottom of the slow cooker and add the lamb roast. Add the remaining vegetables. Drizzle the balsamic vinegar over the vegetables.
3. Cover and cook on high for 1 hour, then turn to low for 10–12 hours.

Lemon Chicken

Makes 6 servings

Ingredients

1 whole chicken
4 stalks celery
8 small red potatoes
1 onion or sliced leeks
¼ cup sherry or dry white wine
2 lemons
1 teaspoon lemon zest

Directions

1. Wash chicken and place it whole in the slow cooker along with vegetables, fluids, and only 1 lemon.
2. Cook for 8–10 hours on low.
3. Add the juice from the second lemon and lemon zest before serving.

H.2. Smoothie Recipes

Energizing Turmeric Smoothie

Makes 1 serving

Ingredients

½ cup frozen pineapple or mango
½ fresh banana
1 cup milk (hemp or coconut milk)

1 tablespoon coconut oil, melted
½ teaspoon turmeric, fresh
½ teaspoon ground cinnamon
½ teaspoon ginger, fresh
¼ teaspoon ground black pepper
1 teaspoon ground chia seeds
1 teaspoon green tea powder (optional)
¼ cup goat yogurt (optional)
1 teaspoon raw honey or 10 drops liquid stevia (optional)

Directions

1. Add ingredients to a blender in the following order: frozen fruit, banana, milk, oil, spices, and remaining ingredients.
2. Blend until smooth.

Pineapple Coconut Cognitive Smoothie

This recipe is easy to make and satisfying for people of all ages who want to support cognitive function by feeding the brain nutrients and fats it can readily use for fuel.

Makes 1 serving

Ingredients

1 cup frozen or fresh pineapple
½ cup coconut milk
1 cup coconut cream
1 tablespoon coconut oil
10 drops stevia liquid

Directions

1. Blend all ingredients and serve cold.
2. If desired, add specific nutrients from the cognitive protocol to the smoothie (see Table N.19. Protocol for Cognitive Decline, Alzheimer's Disease, and Dementia in Appendix N).

Variations

Frozen mango or blueberries also go well with pineapple, for example, use ½ cup of pineapple and 1 cup of mango or ½ cup of blueberries. Another option is to use two heaping tablespoons of pure cocoa instead of the fruit. If you want to gain weight, add 1 heaping scoop of whey protein.

Cashew–Apple Smoothie

By Marlene Bremner

Makes 1 serving

Ingredients

- 2 tablespoons raw organic cashews
- ¼ sweet apple, coarsely chopped
- ½ banana
- 2 tablespoons organic full-fat coconut milk
- ¼ cup coconut yogurt, dairy yogurt, or kefir
- ½ cup milk of choice (hazelnut, almond, rice, etc.)
- 1 tablespoon ground flax seeds
- 1 tablespoon ground chia seeds

Directions

Add all ingredients to a blender in the order they are listed in, and blend until smooth.

Avocado–Coconut Smoothie

Makes 2 servings

Ingredients

- 1 avocado
- 1 banana (fresh or frozen)
- 1 cup coconut milk (full fat)
- ½ cup orange juice
- 2 tablespoons freshly squeezed lime juice
- 1 pinch salt
- 1 teaspoon honey or 12 drops liquid stevia extract (optional)

Directions

1. Peel the avocado and remove the pit. Cut it into chunks and place in a blender.
2. Peel the banana, break in two, and place in the blender.
3. Add the remaining ingredients (and honey or stevia, if using) and blend until smooth, or about 1 minute.
4. Pour into two large glasses and serve.

Fantastic Fungi Smoothie for Cognition and Memory

Makes 1 serving

Ingredients

- ½ teaspoon each, powdered turkey tail and lion's mane
- 2 capsules (emptied) ashwagandha (300–500 mg)
- 1 teaspoon vanilla powder
- 1 cup almond, oat, or hemp milk
- ½ cup fresh or frozen raspberries

Directions

Add these ingredients together in a blender and mix well. Drink daily for 3 months.

Post-Bariatric-Surgery Nutrient-Dense Smoothie

Most powdered foods available for the postbariatric client are not optimal quality and contain additives and corn syrup. Below is an example of a balanced, healthy protein nutrient drink geared toward a 100-kilo (220-pound) individual. These quantities can be adjusted upward or downward based on body weight, assuming an intake of 1.5 g protein per kilo (or per 2.2 lbs).

This provides 75 grams protein per serving; a person can consume two servings daily or supplement it with other protein sources. The recipe is very user-friendly, so feel free to change the protein types or the fruit.

Per Serving, 75 grams protein
Recipe for a person weighing 100 kg

Ingredients

- Pea protein isolate: 45 grams
- Rice protein isolate: 22.5 grams
- Hemp protein: 7.5 grams
- Unsweetened almond/coconut milk: 350–500 ml
- Branched-chain amino acids (BCAAs: leucine, isoleucine, valine): 4 grams (2:1:1 ratio)
- L-glutamine: 3 grams
- L-lysine: 750 mg
- Chlorella: 500 mg
- Spirulina: 500 mg
- Digestive enzymes (protease, amylase, lipase): 300 mg
- Probiotics (lactobacillus, bifidobacterium strains): 1–5 billion cfu
- MCT oil (medium-chain triglycerides): 7 grams

- Calcium citrate: 600 mg
- Magnesium glycinate: 250 mg
- Zinc (picolinate): 25 mg
- Iron (ferrous bisglycinate): 18 mg
- Selenium: 200 mcg
- Vitamin B (methylated) complex
  - Methylated folate (5-MTHF): 400–800 mcg
  - Methylcobalamin (B-12): 1,000–2,000 mcg
  - Pyridoxal 5'-phosphate (P5P) (B-6): 50 mg
  - Riboflavin-5-phosphate (B-2): 25 mg
- Vitamin D-3: 2,000 IU
- Vitamin C: 500 mg
- Fresh berries (blueberries, strawberries, or raspberries): ½ cup (about 75 grams)
- Natural vanilla: 1 gram
- Stevia or monk fruit extract: to taste (for sweetness)

Directions

1. Blend the protein: Add the pea protein isolate, rice protein isolate, and hemp protein into a blender with about 350–500 ml of unsweetened almond/coconut milk.
2. Add the branched-chain amino acids (BCAAs), L-glutamine, and L-lysine.
3. Incorporate the greens (chlorella and spirulina) for extra nutrients and detox support.
4. Add digestive enzymes and probiotics to assist with digestion.
5. Boost healthy fats by mixing in MCT oil for an energy boost and enhanced absorption of fat-soluble vitamins.
6. Add the recommended vitamins, minerals, and micronutrients, such as calcium citrate, magnesium, zinc, iron, selenium, and Vitamin D-3.
7. Add ½ cup of fresh berries for antioxidants, fiber, and flavor.
8. Add your preferred flavoring (vanilla or chocolate) and sweeten with stevia or monk fruit extract to taste.
9. Blend and serve: Blend on high speed for 30 to 60 seconds until smooth and creamy. Serve immediately.

Nutritional Breakdown (per Serving):

Protein: 75 grams
Calories: ~250–300 kcal (with berries)
Fats: 7–9 grams (from MCT oil)
Carbs: ~15–20 grams (from berries and greens)
Vitamins and minerals: Full daily value for key micronutrients, tailored to postbariatric needs.

H.3. Cruciferous Vegetable Recipes

Raw Cultured Vegetables

The fermentation process has two phases. The first phase is when the salty brine kills off harmful bacteria. The second phase is when the good *Lactobacillus* bacteria convert sugars into lactic acid, which gives the product a distinctly tangy flavor and also acts as a preservative.

Makes about 4 cups

Ingredients

- 4 cups washed and dried organic vegetables: 3 parts cabbage and 1 part kale or other vegetable, chopped
- Water, as needed
- Starter culture
- 3–5 cabbage leaves, whole

Directions

1. Chop the vegetables by hand and mix in a bowl.
2. Take several cups of the mixture and blend it with water to make a brine (it should be a thick liquid). Add the starter cultures to the brine.
3. Use an airtight container, either glass or steel, with a rubber or plastic seal and a clamp-down lid. Add the remaining chopped veggies to this jar, with brine, packing them in snugly, leaving 2 inches at the top. Roll up the additional cabbage leaves and lay them across the top of the jar to fill this 2-inch space, to hold the chopped veggies below the top of the brine.
4. Let the jar sit at room temperature for a minimum of three days, and it's best to let it sit for a week or more. The culture should be kept at around 70°F. Warmer temperatures will speed up the culturing, so the vegetables will be ready in about half the time, but if it's too warm, the vegetables may spoil. When it's colder, it may be necessary to insulate the container to keep it from getting too cold.
5. When the vegetables are done (you can taste them throughout the fermentation period to get a sense of this), place them in the refrigerator. They will stay good for up to 8 months.

Coleslaw With Yogurt

Adapted from Jeffrey Goettemoeller, *Stevia Sweet Recipes: Sugar-Free—Naturally!* (Garden City Park, NY: Square One Publishers, 1998).

Makes 4 servings

Ingredients

- 2 cups shredded cabbage
- ½ cup chopped cauliflower

¾ cup shredded carrots
¼ cup toasted pecans
⅓ cup currants or raisins
⅛ teaspoon stevia extract powder
2 teaspoons fresh lemon juice
A few drops vanilla extract
½ cup plain yogurt

Directions

1. Combine the cabbage, cauliflower, carrots, pecans, and currants in a large bowl.
2. In a smaller bowl, whisk together the remaining ingredients and pour over the cabbage mixture, stirring well to combine.

Asian Slaw

Makes 4 servings

Ingredients

5 cups shredded cabbage and carrots, mixed
4 tablespoons brown rice vinegar
4 tablespoons Bragg's liquid aminos or coconut aminos
1 tablespoon maple syrup
1 tablespoon dark toasted sesame oil
1 tablespoon olive oil
2 teaspoons black pepper

Directions

Mix all ingredients together in a large bowl. Refrigerate for at least 1 hour prior to serving.

Pineapple-Cabbage Slaw With Chili–Coconut Dressing

Makes 4 servings

Ingredients

Roasted Chili–Coconut Dressing/Sauce
½ cup organic extra virgin coconut oil

4 generous teaspoons coarsely ground Aleppo chili or other flavorful medium-hot to hot ground chili
4 large garlic cloves, finely chopped
1⅓ cups full-fat coconut milk
2 to 2½ tablespoons Asian fish sauce
¼ teaspoon liquid stevia
¼ to ⅓ teaspoon pink or gray sea salt
Juice of 1 to 1½ large limes (optional)

Salad

3–4 cups mixed greens
8 leaves Napa cabbage, thinly sliced
4 whole scallions, thinly sliced
1½ cups fresh pineapple, cut into bite-sized pieces
½ cup dry-roasted and salted broken cashews
1½ to 2 cups cooked and diced tempeh, chicken, or seafood
½ cup fresh mint, coriander, or basil leaves, torn
Sea salt and fresh ground black pepper

Directions

1. Heat the coconut oil in a large sauté pan over medium heat to make the dressing. Add the chili and garlic and heat slowly for about 2 minutes, stirring often, until the garlic is fragrant and sizzling but not browned.
2. Add the coconut milk and increase the heat, bringing the mixture to a boil. Allow it to boil for 30 seconds while stirring. Add two tablespoons of the fish sauce, the stevia, and the salt. Boil for 30 seconds or until it is thickened, bubbly, and a rich caramel color.
3. Immediately transfer the sauce to a bowl. The sauce can be refrigerated for several days.
4. Mix all the greens and cabbage in a bowl to make the salad, then divide between four plates. Divide the remaining ingredients between each plate, tossing them over the greens—season with salt and pepper.
5. If the sauce was made in advance, simply reheat it on the stove until bubbly, then drizzle it over each salad. Squeeze fresh lime juice over the salads and serve.

Coconut Turmeric Cauliflower

Adapted from Mikaela Reuben, *Mind Body Green* (2014), retrieved from https://www.mikaelareuben.com/recipes-1/coconut-turmeric-cauliflower

Makes 4 servings

Ingredients

1 head cauliflower, stem removed, and cut into 1- to 2-inch florets

- 1 stalk lemongrass
- 2½ tablespoons coconut oil
- 1 shallot, chopped
- 1-inch piece of ginger, peeled and chopped
- 6 kaffir lime leaves
- 1 tablespoon turmeric powder
- 1 pinch sea salt

Directions

1. Turn the oven on to broil.
2. Peel the outer leaf of the lemongrass off. Bruise the lemongrass by pounding or pressing the inside with a wooden spoon. Chop into ½-inch pieces.
3. Add 1½ tablespoons coconut oil to a medium-sized pot and put on medium heat. Add shallot and ginger and cook until softened. Add lemongrass and kaffir lime leaf, reduce to low, and simmer for at least 30 minutes.
4. Toss the cauliflower and remaining 1 tablespoon coconut oil together in a bowl with a little sea salt and place on a baking pan. Put in the oven and broil until it is lightly browned, watching closely as it will cook quickly.
5. Strain the lemon grass mixture and drizzle the sauce over the cauliflower. Add sea salt and turmeric, tossing until the cauliflower is thoroughly coated and a lovely yellow color.

Stuffed Cabbage

Makes 6 servings

Ingredients

For the sauce

- 3 tablespoons extra virgin olive oil
- 1½ cups chopped onion (2 onions)
- 2 (28-oz) cans crushed tomatoes with juice
- ¼ cup red wine vinegar
- 2 tablespoons raw honey
- ½ cup raisins
- 1½ teaspoons sea salt
- ¾ teaspoon freshly ground black pepper
- 1 large head Savoy or green cabbage, including outer leaves, core removed

For the filling

- 2½ pounds ground chuck
- 3 extra large eggs, lightly beaten
- ½ cup finely chopped onion
- ½ cup brown rice (or other grain of choice)

1 teaspoon minced fresh thyme leaves

1½ teaspoons sea salt

½ teaspoon freshly ground black pepper

Directions

1. To make the sauce, heat the olive oil over medium-low heat and cook the onions until translucent, 5–10 minutes. Add the tomatoes with their juice, vinegar, honey, raisins, salt, and pepper. Turn the heat up, bring to a boil, and then return to low heat and simmer for 30 minutes, uncovered. Stir occasionally. Set aside.
2. While the sauce is cooking, bring a large pot of water to a boil.
3. Immerse the head of cabbage in boiling water for a few minutes, peeling off each leaf with tongs as soon as it is soft. Set the leaves to the side.
4. For the filling, combine the ground chuck, eggs, onion, brown rice, thyme, salt, and pepper in a large bowl. Add 1 cup of the sauce to the meat mixture.
5. Preheat the oven to 350°F.
6. To assemble, cut out the hard triangular rib from the base of each cabbage leaf with a small paring knife. Spread 1 cup of the sauce in the bottom of a large Dutch oven or glass baking dish. Place ⅓ to ½ cup of filling in an oval shape near the rib edge of each leaf and roll up toward the outer edge, tucking the sides in as you roll. Place half the cabbage rolls, seam sides down, over the sauce. Add more sauce and cabbage rolls until all the cabbage rolls are in the pot, and cover with the remaining sauce. Cover the dish tightly with the lid (or aluminum foil) and bake for 1 hour or until the meat is cooked and the rice is tender. Serve hot.

Roasted Cauliflower With Anchovy Sauce

This unusual dish is ideal for the carnivore who needs purine-rich foods. The carnivore is often a fast metabolizer, just like a car engine that revs too hot and needs those purines and proteins to feed it, so it doesn’t overheat. Besides anchovies, organ meats are excellent sources of purines, but many people avoid them. This recipe combines the best of cruciferous and purines that will make you hum.

Makes 3–4 servings

Ingredients

½ cup extra virgin olive oil

4 oil-packed anchovy filets, drained

2 garlic cloves, minced

¼ teaspoon crushed red pepper

8 cups cauliflower florets or about 1 large head

2 tablespoons minced fresh Italian parsley

2 teaspoons fresh lemon juice

¼ teaspoon sea salt (optional)

Directions

1. Preheat the oven to 450°F.
2. Make the seasoned oil by combining a quarter cup of the olive oil plus the anchovies, garlic, and red pepper in a small skillet. Cook gently for 5 minutes. Remove from heat.
3. Place the cauliflower in a bowl, adding the remaining olive oil so the cauliflower is well coated. Pour onto the baking sheet in a single layer. Bake at 450°F for 10 minutes.
4. Drizzle the seasoned oil from the skillet over the cauliflower and mix well. Continue baking at 450° for 30 minutes.
5. Sprinkle the seasoned cauliflower with parsley and lemon juice. Taste before adding more salt.

H.4. Grains and Seeds Recipes

Soaking and Cooking Grains

Soaking grains before cooking them shortens the cooking time, releases nutrients, and increases their digestibility.

1. Wash grains.
2. Place grains in a bowl and cover with warm water.
3. For each cup of grain, add one tablespoon of apple cider vinegar or lemon juice.
4. Soak at room temperature for 8 to 12 hours.
5. Drain the water from the grains, place them in a cooking pot, and fill them with fresh water according to specific grain-to-water ratios. Add about a ¼ teaspoon of sea salt per cup of grain, or use seaweed.
6. Bring the water to a boil, reduce heat to low, cover, and cook according to specific grain cooking times. Cooking time may be reduced by half after soaking, so check the grains halfway through.

Black Rice Breakfast Pudding With Coconut and Fruit

Adapted from Sarah Britton, *My New Roots* (New York: Clarkson Potter, 2015). Retrieved from http://www.mynewroots.org/site/2014/01/coconut-black-rice-breakfast-pudding/

Makes 3–4 servings

Ingredients

1 cup black rice

1 can coconut milk (full-fat)

¼ teaspoon fine grain sea salt

½ vanilla bean, seeds and pod (optional)

½ cup water

1 tablespoon maple syrup, raw honey, or raw agave

⅓ cup coconut flakes, lightly toasted

Mango, raspberries, blueberries, pomegranate, banana, kiwi, pineapple, or other fruit of your preference

Directions

1. Cover the rice with water and soak overnight or for up to 8 hours. Drain and rinse.
2. Combine the rice in a pot with the coconut milk, salt, vanilla bean, and the ½ cup of water. Bring to a boil, reduce to a simmer and cover. Cook, stirring frequently, until the rice is tender and most of the liquid has been absorbed (you still want a little liquid), about 25–30 minutes.
3. While the rice is cooking, prepare all the fruit that you would like to accompany the pudding.
4. When the rice is done cooking, remove from the heat and gently stir in the maple syrup, honey, or agave.
5. Serve the black rice in bowls and top with the fruit and toasted coconut.

Congee

A traditional Chinese recipe, congee is a rice porridge cooked with lots of water for a long time. It is a real comfort food that promotes strong digestion, is easily assimilated, and is easy and affordable to make. It can be adapted to increase its medicinal properties by adding other beneficial vegetables, grains, legumes, medicinal or culinary herbs, or animal proteins. These ingredients will also be more easily digested and assimilated by cooking with rice and water.

Makes 3–4 servings

Ingredients

1 cup grain (usually white or brown rice)

5 to 6 cups liquid (usually water, but homemade broth like dashi is excellent)

Pinch of sea salt

Directions

1. If you are using a slow cooker, add the ingredients and set to low, leaving it on overnight.
2. If you are using the stovetop, add the ingredients to a stockpot, cover, and bring to a boil. Reduce heat to very low and simmer for four to six hours.
3. Too much water is better than too little, and the longer the congee cooks, the better it gets.

Additions

Try adding carrot to aid with digestion and to reduce gas, or ginger for its warming effects and to improve digestion.

Khichadi

Recipe adapted from John Douillard, “Kitchari Recipe: How to Prepare This Cleansing Ayurvedic Food. What’s So Amazing About Kitchari?” Retrieved from https://lifespa.com/diet-detox/kitchari-ayurvedic-cleanse-detox/#Kitchari_Recipe

Khichadi (also called kitchari, kitcheree, khichdi, khichri, etc.) means “mixture,” it refers to an Ayurvedic dish combining basmati rice, mung beans, and nutritional spices. It is a comforting gluten-free vegetarian dish that is easy to digest and has many nutrients. It is also high in protein, calcium, iron, fiber, Vitamin C, magnesium, phosphorus, and potassium. Its nutritional benefits are amplified when cooked with turmeric and black pepper and served with ghee. Khichadi is detoxifying, increases immunity and energy, and stimulates digestive enzymes. This light and satisfying dish is suitable for those with digestive problems and is good during illness or upset stomach. The dish uses split yellow mung beans, which are easier to digest than other beans and do not produce as much gas. Khichadi can be eaten for three meals a day as a cleansing food, as it provides adequate protein to balance blood sugar, which can quickly become out of balance during water, juice, or other restrictive fasts. If using it to cleanse, use less ghee or omit it altogether. However, ghee should always be used when eating khichadi as a regular meal. White rice is better than brown if khichadi is used to cleanse. Digestion is weakened during a cleanse, and brown rice is too hard to digest.

Makes 6 servings

Ingredients

- 1 cup split yellow mung dahl beans
- ¼–½ cup long grain white or white basmati rice
- 1 tablespoon fresh ginger root, grated
- 1 teaspoon each: black mustard seeds, cumin, and turmeric powder
- ½ teaspoon each: coriander powder, fennel, and fenugreek seeds
- 3 cloves
- 3 bay leaves
- 7–10 cups water
- ½ teaspoon sea salt
- 1 small handful cilantro leaves, chopped
- 2 scallions, thinly sliced

Directions

1. Soak beans overnight and then drain.
2. Place split yellow mung beans and rice together in a pot and rinse with water, using your hands to swish the rice and beans around. When the water becomes cloudy, drain it, add

fresh water, and rinse again. Continue this process until the water runs clear. Then, strain the rice and beans.
3. Preheat a large pot on the stove. When ready, dry-roast all the spices (except the bay leaves) on medium heat for a few minutes to enhance their flavors.
4. Add the bean and rice mixture and mix well.
5. Add water and bay leaves and bring to a boil. Boil for 10 minutes.
6. Reduce the heat to low, cover, and continue simmering for about 30–40 minutes or until the rice and beans are soft.
7. Just before serving, top with the cilantro leaves, scallions, and sea salt to taste.

Notes: When not cleansing, or if more blood sugar support is needed during a cleanse, steamed vegetables or lean meat can be added. Be sure to get split yellow mung beans, also called *moong dal*. Do not use whole mung beans (they are green) or yellow split peas.

Mushroom Risotto

I love all risotto recipes because they require patience. It can become a meditation to gather and prepare everything that goes into the risotto and then the stirring; the gentle, rhythmic, mindful stirring is relaxing. Invite friends over to share because there will be enough for several plates. Then, the treat is sitting down to eat the comforting richness of a smooth risotto that warms the heart and belly. Pair this with a green salad in which some bitter greens are added to help digest the brain-healing fats. Enjoy a meal made with love.

Note: If alcohol is contraindicated, just leave it out.

Makes 3–4 servings

Ingredients

- 5–6 cups chicken stock
- 2 tablespoons butter
- 2 cups shiitake and oyster mushrooms, cleaned, trimmed, and cut into half-inch pieces
- ⅓ cup finely chopped sweet onion
- 1¾ cups arborio rice
- ⅔ cup brandy or dry white wine
- ⅓ cup freshly grated Parmesan cheese
- Sea salt and freshly ground black pepper, to taste
- 2 tablespoons chopped fresh parsley

Directions

1. Bring stock to a simmer in a saucepan.
2. Melt the butter in a deep, heavy, medium-sized saucepan over medium-high heat. Add mushrooms and onions and sauté for about 5 minutes. Add the rice and stir to combine.

3. Add brandy, bring to a boil, and reduce the liquid by half, about 3–4 minutes. Add simmering stock, ½ cup at a time, stirring enough to keep the rice from sticking to the edges of the pan. Stir the rice almost constantly—stirring sloughs off the starch from the rice, making the creamy sauce you want in a risotto. Wait until the stock is almost completely absorbed before adding the next ½ cup. This process will take about 25 minutes. The rice should be just cooked and slightly chewy.
4. Stir in the Parmesan cheese and season to taste with salt and pepper. Garnish with chopped fresh parsley or chives.

Oatmeal

Ingredients

- 1 part steel-cut oats
- 3 or 4 parts water (more water makes it creamier, less keeps the oats more intact)
- ⅛ teaspoon salt
- Options include topping with raw walnuts, dried fruit, and whole cream or almond milk.

Directions

Boil the water and add the oats and salt, reduce the heat, and simmer 20–30 minutes until tender.

Overnight Oatmeal

Ingredients

- 1 part rolled oats
- 1 part water or milk (soy, rice, almond, or coconut milk)
- Agave miel or honey to taste (optional)
- Dried fruit and nuts (optional)

Directions

1. Place all ingredients in a bowl and mix well.
2. Pour into a glass container and store in the refrigerator overnight.
3. In the morning it will be ready, and you can top with other fresh ingredients if desired.

Granola

I like to make granola with more nuts and fruit than the traditional oats-dominant recipes. It makes a wonderful breakfast or snack for school or travel, allowing you to control the contents of your cereal and make it protein-rich. If you are gluten-sensitive, purchase gluten-free oats since oats are often processed alongside wheat or other gluten grains. It is essential to buy organic and raw products, and dried fruit should not be sweetened or have preservatives, which can be neurotoxic. After you make your first batch, add different dried fruit, nuts, and seed options. Add a little almond, coconut, hemp, rice milk, or goat yogurt with a banana. You have a perfect brain food meal, rich in coconut and healthy sweeteners for brain energy, protein-rich nuts and seeds providing amino acids, and a good dose of fiber from the oats, which aids the colon and induces relaxation.

Makes about 13 cups

Ingredients

Use all raw organic items

- 5 cups oats
- 1 cup pumpkin seeds
- 1 cup sunflower seeds
- 1 cup almonds
- 1 cup pecans
- 1 cup cashews
- ½ cup sesame seeds
- ½ cup ground chia seeds
- 1 cup grated coconut
- ¼–½ cup coconut oil
- ½ cup raw honey, raw organic maple syrup, or dark agave syrup
- 1 cup raisins
- Dried cranberries or blueberries, chopped dates, black mission figs, and hemp seeds (optional)

Directions

1. Mix all the ingredients in a large mixing bowl except the grated coconut, coconut oil, sweetener of choice (honey/maple/agave), raisins, and other dried fruit.
2. Gently melt the coconut oil and the sweetener in a pan over a light heat.
3. Pour the coconut oil/sweetener mixture into the ingredients bowl, mixing well so the ingredients are coated.
4. Option 1: Heat a cast-iron skillet over low heat. Add a layer of oat mixture (2 inches thick) and stir constantly until lightly toasted.
5. Option 2: Place a layer of parchment paper on a large cookie sheet and cover it with 2 inches of the granola mixture—place in an oven at 350°F. Set the timer for 15 minutes and stir the mixture at 15 minutes, making sure the edges are not getting too brown. Then, place in the oven for another 10 minutes or so. The goal is to gently brown but not overcook the ingredients, so watch them well.

6. Note that the granola mixture will continue to cook once out of the cast-iron pan or the oven.
7. After finishing each batch, put it in a large glass or ceramic bowl. Add the grated coconut, organic raw raisins, and other dried fruit. Mix well and let cool before adding to quart-size bottles or plastic bags.

Oat Milk

Oat milk is easy to make and a tasty alternative to cow's milk. Oats are antianxiety, and you avoid the problems of arsenic in rice and the time required to make fresh nut milk. In short, it's an excellent alternative to have on hand.

Makes 5 cups

Ingredients

- 1 cup organic rolled oats
- 4 cups water
- ¼ teaspoon salt
- 1 tablespoon maple syrup (optional)
- ½ teaspoon vanilla extract (optional)

Directions

1. Put all ingredients in a blender and blend for 1 minute.
2. Strain through a nut milk bag or cheesecloth placed over a fine mesh strainer.

Cooked Millet

Makes 3–4 servings

Ingredients

- 1 cup raw millet
- 2 cups water (or broth)
- ¼ teaspoon salt (optional)
- 1 tablespoon unsalted butter or coconut oil

Directions

1. In a large, dry saucepan, toast the raw millet over medium heat for 4–5 minutes or until it turns a rich golden brown and the grains become fragrant. Do not burn.

2. Add the water and salt to the pan and stir. Bring to a boil; then turn the heat to low. Add the butter and cover the pot. Simmer until the grains absorb most of the water, about 15 minutes.
3. Remove from the heat and allow it to sit, covered and removed from heat, for 10 minutes.
4. Fluff the millet with a fork and add additional salt, if desired. Millet does not keep well and is best served warm.

Variations

To make millet porridge, increase the liquid to 3 cups and stir every few minutes as the millet simmers.

Buckwheat

Technically, buckwheat is not a grain but a seed from a flowering plant related to rhubarb. However, it cooks like a grain and is similar to grains in taste and texture, and it is an excellent choice for a gluten-free diet.

Makes 3–4 servings

Ingredients

- 2 cups water
- Salt to taste (I use ¾ teaspoon)
- 1 tablespoon unsalted butter
- 1 cup toasted buckwheat groats (kasha), preferably medium-cut (cracked)
- 1 egg

Directions

1. Combine water, salt, and butter in a small saucepan and bring to a boil. Once it reaches the boil, turn off the heat and cover.
2. Beat egg and add kasha. Mix until grains are coated.
3. Transfer to a medium-sized, wide, heavy saucepan. Place over high heat and stir egg-coated groats constantly until grains are dry, smell toasty, and no egg is visible, 2 to 3 minutes.
4. Add just-boiled water mixture, turn heat to very low, cover, and simmer until all the liquid is absorbed (10–12 minutes for cracked kasha, 30 minutes for whole kasha).
5. Remove from heat. Remove the lid from the pan, place a clean dish towel over the pan (not touching the grains), and cover tightly. Let sit for 10–15 minutes. Fluff and serve.

H.5. Soaking Legumes and Nuts

Legumes

1. Place the legumes in a bowl and cover with warm water.
2. For each cup of beans, add one tablespoon of apple cider vinegar or lemon juice (do not add vinegar or lemon juice to lentils and split peas). For smaller beans, use twice as much vinegar or lemon juice.
3. Soak at room temperature for a minimum of 7 hours. Larger beans should be soaked for 24 hours, being sure to change the water if they begin to ferment.
4. After soaking, drain and cook according to how they are typically cooked.

Nuts

1. To soak nuts, simply cover them in warm water and soak them for 7 hours.
2. Drain the nuts and let them sit at room temperature to dry out.

H.6. Root Vegetable Recipes

Honey and Chipotle Roasted Sweet Potato Spears

Adapted from Diane Morgan, *Roots: The Definitive Compendium with More Than 225 Recipes* (San Francisco, CA: Chronicle Books, 2012).

Makes 4 servings

Ingredients

- 4 pounds medium sweet potatoes or yams, peeled, halved crosswise, and sliced into ½-inch wedges
- 1 tablespoon plus ½ cup unsalted organic butter, at room temperature
- 1 teaspoon chipotle chili powder
- ½ cup honey
- ⅓ cup fresh lime juice
- 1 teaspoon fine sea salt

Directions

1. Position a rack in the center of the oven and preheat to 400°F. Put the sweet potatoes in a large bowl. Coat a large-rimmed baking sheet with one tablespoon of butter.
2. Melt the remaining ½ cup butter in a small saucepan over medium heat. Whisk in the chili powder, then add the honey, lime juice, and salt. Bring to a simmer, stirring constantly, and simmer for 3 minutes to melt the glaze.
3. Pour the glaze over the sweet potatoes and toss until well-coated. Spread the sweet potatoes in a single layer on the prepared baking sheet, scraping the glaze from the bowl onto them. Cover the pan tightly with aluminum foil.

4. Roast the sweet potatoes for 40 minutes. Remove the foil and baste the sweet potatoes with the pan glaze. Continue to bake, basting every 10 minutes, until the sweet potatoes are tender, nicely browned, and caramelized at the edges, about 20 minutes longer. Serve immediately or keep warm in a low oven for up to 30 minutes and then baste again just before serving.

Honeyed Carrots

By Rudolph C. Ryser

Makes 3–4 servings

Ingredients

- 1 pound carrots
- 2 tablespoons unsalted butter
- ¼ teaspoon dried French tarragon
- 2 tablespoons raw honey

Directions

1. Peel the carrots and cut into halves and quarters of equal size.
2. Heat a cast-iron pan on medium and slowly melt butter.
3. Place cut and quartered carrots in the pan and sauté for 5 to 10 minutes or until tender.
4. Add tarragon and honey to the carrots and stir lightly. When all ingredients are fully integrated, turn out onto a serving dish and serve immediately.

Yucca Fries With Cilantro-Lime Dipping Sauce

Recipe adapted from Diane Morgan, *Roots: The Definitive Compendium with More Than 225 Recipes* (San Francisco, CA: Chronicle Books, 2012).

Cilantro is a powerful detoxifier of heavy metals.

Makes 4 servings

Ingredients

Dipping Sauce

- ½ cup sour cream or Greek yogurt
- ½ cup fresh cilantro, finely chopped
- 2 teaspoons fresh lime juice
- ¼ teaspoon fine sea salt

Fries

- 1½ pounds yucca
- 8 cups water
- Fine sea salt
- 3 small dried red chilies such as chile de árbol
- About 5 cups peanut, grapeseed, or vegetable oil for deep frying

Directions

1. Begin by making the dipping sauce. Combine all dipping sauce ingredients in a blender and purée until smooth. Transfer to a bowl, cover, and refrigerate until ready to serve.
2. Trim the ends off of the yucca and peel off the skin. Cut the yucca in half and remove the fibrous core in the center.
3. Bring the water to a boil in a large pot, add two tablespoons of salt and the chilies, and then add the yucca. Simmer, uncovered, until tender (but not mushy) when pierced with a wooden skewer or fork, about 20 minutes. The yucca may cook at different rates, so check often for tenderness and remove the tender ones. Drain the yucca in a colander, and then transfer to a bowl of ice water. Drain it and pat dry with paper towels when it has cooled down. Slice the yucca into thick fries about ¾ inch thick.
4. Line two baking sheets with two layers of paper towels. Have a slotted spoon or wire mesh skimmer ready. Pour the oil into a deep, heavy pot or wok, so it is about 3 inches deep, and heat to 360°F (use a deep-frying thermometer). Fry the yucca in small batches. Add a handful of fries to the hot oil and fry, and cook until golden brown, stirring once or twice, 2½ to 3 minutes (test a fry to make sure it is crispy on the outside and soft inside). Use the slotted spoon/skimmer to remove the fries from the oil and place them on the paper towels to absorb the oil. Sprinkle with salt. Continue cooking small batches of fries, rechecking the oil temperature to make sure it stays at 360°F.
5. Serve hot with the dipping sauce.

Onion-Garlic Soup

Onion soup with garlic is medicine. It is an inexpensive meal rich in sulfur compounds. Garlic and onions should be eaten daily, but this soup can be made on special occasions, especially to boost mood and enjoy a rich dinner on a cool evening. Sulfur compounds also support glutathione synthesis, making this a powerful detoxification meal. It is also an ideal meal if you have sinus congestion or during a cold.

Makes 4–6 servings

Ingredients

- 6 large red or yellow onions (about 3 pounds), peeled and thinly sliced
- 2 tablespoons olive oil
- ½ teaspoon honey (optional)
- 1 teaspoon sea salt
- 4 cloves garlic, minced

- ½ cup dry white wine
- 8 cups fresh beef/bone broth, chicken stock, vegetable stock, or a combination
- 2 bay leaves
- ¼ teaspoon dried thyme
- Sea salt and pepper to taste
- 3 tablespoons brandy (optional)
- Optional: French bread (or gluten-free bread) and 1½ cups grated Swiss Gruyere, goat cheddar, or Parmesan/Romano cheese (optional)

Directions

1. In a 5- to 6-quart, thick-bottomed pot, heat the olive oil on medium heat. Add the onions and toss to coat with the olive oil. Cook the onions, stirring often, until they have softened, about 15–20 minutes. Increase the heat to medium-high and cook, stirring often, until they start to brown, about 15 more minutes. Then, sprinkle with the honey and one teaspoon of salt, and continue to cook until the onions are well browned, about 10–15 minutes.
2. Add the minced garlic and cook for a minute more. Add the wine to the pot and scrape up the browned bits on the bottom and sides, deglazing the pot as you go.
3. Add the stock, bay leaves, and thyme. Bring to a simmer, cover the pot, and lower the heat to maintain a low simmer. Cook for about 30 minutes. Season to taste with more salt and freshly ground black pepper. Discard the bay leaves and add brandy.
4. You can prepare bread (or gluten-free bread) to serve with the soup when it is done. First, slice and toast the bread. Then, transfer the soup to overproof serving bowls, place a piece of bread on top of the soup, and sprinkle some cheese on top. Place the bowls under the broiler for a few minutes until bubbling and brown.

H.7. Fermented Foods

Kimchi

Makes 8–10 cups

Ingredients

- 2 heads Napa cabbage (or another Chinese cabbage variety), shredded in a food processor
- 5–10 scallions, finely chopped
- 2–3 cloves garlic, crushed
- 1 teaspoon fresh ginger, crushed
- 2 jalapeños, finely minced
- 2 tablespoons crushed fresh red chili pepper
- Half an onion, chopped (optional)
- Filtered or distilled water, as needed

½ teaspoon Celtic sea salt or Himalayan pink salt

2 tablespoons raw honey

Directions

1. Mix all ingredients (except salt and honey) in a bowl.
2. Add several cups of the mixture to a blender with filtered or distilled water, salt, and honey, and blend to make a brine (it should be a thick liquid). If desired, starter cultures can be added to the brine.
3. Add chopped vegetables and brine to a 1½ quart glass or stainless steel jar, packing them in snuggly, leaving 2 inches at the top. Take several cabbage leaves, roll them up, and place them at the top to fill this 2-inch space.
4. Let the jar sit at room temperature for a minimum of three days, and it is best to let it sit for a week or more. The culture should be kept at around 70°F.

Curtido

Curtido complements and aids in the digestion of protein. Depending on how you make it, it can be fermented or pickled. Pickling involves an acidic brine like the one below. Fermenting involves a salted fermentation process that occurs over several days. It's worth experimenting with both culinary methods and seeing which you prefer. Vinegar is also an energy and mood booster.

Curtido can accommodate almost any raw vegetable, including cabbage, which is common in Salvadoran curtido. This recipe takes 10 minutes to make.

Note: This recipe calls for Mexican oregano (*Lippia graveolens*), an herb that differs from the mint species (*Origanum vulgare*) we often use in Italian cooking.

Makes about 3½ cups

Ingredients

½ medium red onion, peeled and very thinly sliced

1 cup carrots, thinly sliced

½ cup cauliflower, broken into small florets

2 large jalapeños, halved and seeded

1 heaping teaspoon Mexican oregano

1 cup apple cider vinegar

1 tablespoon raw honey

½ teaspoon sea salt

¼ cup extra virgin olive oil

Directions

1. Toss the onion, carrot, cauliflower, jalapeno, and oregano in a large bowl.

2. Combine the vinegar, honey, and salt in a small saucepan and cook over low heat, stirring for about 3–5 minutes until all the ingredients dissolve.
3. Pour the vinegar mixture over the vegetables and mix gently. Add the olive oil and toss well. Cover and let this mixture cool on the countertop. The heated liquid plus the cover will soften the raw vegetables.
4. When the mixture is cool, spoon it into one or more wide-mouth mason jars or a glass container and refrigerate overnight. It's ready to eat the next day, but the flavors intensify if you wait even longer. Use it as a side dish or a snack.

Note: When you handle raw chilies like jalapeños, the volatile oils get on your hands, and if you rub your eyes, these will cause your eyes to burn. Soap and water do not break down the oils, as a rule. So, after handling chilies, do what my *compadre* Alicia Rodriguez taught me: rub your fingers through your hair so the hair captures the chili oils, and then you may wash your hands with soap and water and not worry about accidentally spreading chili oil where you don't want it.

Homemade Yogurt

Yogurt is often most effective as a functional food when made fresh at home. Many commercial yogurts are pasteurized after fermentation, which kills the natural probiotic bacteria. In such cases, probiotic bacteria are added afterward to restore the health benefits, though the potency may not be as high or diverse as freshly made yogurt. You will need a starter culture to begin. You can purchase it as a specific product or you can buy any live-culture yogurt available at the store. Make sure it says "contains live cultures." Once you have finished your first batch, you can reserve a little bit as the starter culture for the next batch.

Makes 4 quarts

Ingredients

1 gallon of milk

1 cup yogurt starter (use a small cup of plain yogurt, or a cup from your previous batch)

1 gallon warm water

You will also need four quart-size glass canning jars with four lids and four screw tops, and a cooler that will fit the four glass jars.

Basic Steps

1. Heat the milk.
2. Cool the milk.
3. Add a cup of yogurt starter.
4. Pour mixture into sterilized mason jars.
5. Let the jars sit in a cooler with warm water for several hours.

Detailed Instructions

1. Sterilize your glass jars, lids, and screw tops: Place them in a large pot. Fill with an inch of water; cover with lid and heat to boiling. Boil for 10 minutes. Leave the lid on the pot and move it off the heat until you are ready to use the jars.
2. Pour the milk into a large, heavy-bottomed stockpot or Dutch oven. Heat the milk to 185–190°F (90–90°C).
3. Cool the milk by placing the pot in a sink filled with cold water. Let it sit until the temperature reaches 120°F (50–55°C).
4. Add the yogurt starter to the cooled milk and mix with a whisk, stirring well to distribute the starter.
5. Pour the milk into the jars and put the lids and screw tops on. Place them into the cooler.
6. Heat the gallon of water to 120°F (50–55°C) and pour into the cooler around the sealed yogurt jars. Close the cooler lid and let it sit for 3 hours.
7. After 3 hours, remove the yogurt jars from the cooler and place in the refrigerator.

Homemade Kefir

Ingredients

Whole milk (cow, goat, sheep, or coconut; can be raw milk)

Starter culture

Directions

1. Gently heat the milk to about 90°F. Remove from the heat.
2. Add the starter culture, mix it up, cover, and let sit at room temperature for 24 hours.
3. It will thicken up enough for a toothpick to stand up in it. When it is ready, it will be thick but still pourable. Shake the kefir and place in the refrigerator.
4. A second batch of kefir can be made by simply adding a few spoonfuls of the first batch to the warmed milk.

Miso Soup With Natto

Makes 1–2 servings

Ingredients

¼ cup dried wakame seaweed

2 cups dashi (see recipe below)

4–5 shiitake mushrooms, sliced

2 tablespoons natto, or to taste

2 tablespoons brown miso

2 tablespoons sweet white miso, such as Saikyo

2 scallions, sliced (for garnish)

Directions

1. Soak the seaweed in warm water for 30 minutes before cooking.
2. In a soup pot, bring the dashi to a simmer and add the mushrooms and the seaweed. Simmer for 10 minutes, then reduce the heat to low.
3. In a separate bowl, mix together the natto, brown miso, and sweet white miso, adding as much of the broth as necessary to make a smooth, creamy paste. Place this mixture into the soup pot and let it heat through for 1 minute while stirring to dissolve the paste.
4. Serve immediately. Garnish with scallions.

Dashi

Dashi is a type of stock usually made from dried bonito (fish) flakes and/or kombu seaweed. It can also be made using store-bought dashi powder or granules, but homemade dashi is higher quality, more nutritious, and better tasting.

This basic Japanese soup stock is a key ingredient to many Japanese dishes, like Miso Soup (above) and Congee (see Section H.4). It only takes about thirty minutes to make “first dashi,” a light broth with a milder flavor, by straining stock ingredients. “Second dashi” is made by cooking the kombu and bonito from the first dashi again to make a stronger, darker broth.

Makes 5 cups

Ingredients

5 cups cold water

1 ounce dried kombu (about 5 × 5 inches)

3 cups loosely packed bonito flakes (*katsuobushi*)

Directions

1. Gently wipe the kombu with a damp cloth or paper towel, removing some of the powdery excess but not all of it.
2. Place the kelp in a pot with the cold water. (If making ahead of time, soak the kombu for several hours to bring out its flavor.)
3. Put the water on medium heat and slowly bring it to near boiling. Once the water is trembling and you see bubbles forming in the pot, just before boiling, remove the kelp (reserve to make second dashi—see Step 6).
4. Add the bonito flakes and bring the stock to a full boil. Turn off the heat and let it sit for 5 minutes while the bonito flakes sink to the bottom of the pot.
5. Using a fine strainer or sieve, strain and separate the bonito flakes from the broth. Reserve the bonito flakes for use in the second dashi. The broth, or first dashi, can be

used immediately in recipes (see Miso Soup with Natto recipe on the previous page), refrigerated for 3–7 days, or frozen for 3 weeks.

6. *If making a second dashi:* Add the reserved kombu and bonito flakes to a medium pot with 5 cups of water. Simmer over low heat for 10 minutes but do not boil.
7. Strain the stock through a fine strainer or sieve. Discard the bonito. The kombu can be discarded, eaten with sesame oil, sesame seeds, and salt, or added to other soups or stews.
8. Second dashi can be stored in the refrigerator for 3–7 days or frozen for 3 weeks.

H.8. Salad Dressings

The best salad dressings are those you make yourself. They are healthy, medicinal, and taste good. Vinaigrettes are especially good for decreasing fatigue, and apple cider vinegar increases energy, reduces depression, and improves mood.

Vinaigrette Salad Dressing

Make this dressing and keep it in a glass bottle in the fridge for up to 2 weeks or use with the Salad Jars recipe.

Makes 3½ cups

Ingredients

- ½ cup of cold-pressed, extra virgin olive oil
- ½ cup organic flaxseed oil
- 2 cups organic apple cider vinegar
- 1 fresh lime or lemon (optional)
- 2 cloves fresh garlic, crushed
- ½ teaspoon of your favorite fresh or dried herb (dill, basil, oregano, caraway seed, etc.)

Directions

Combine all ingredients in a glass bottle, shake, and refrigerate. Use 1 tablespoon over your salad each day.

Addition

Add some cranberries! Use fresh berries that are cooked and strained, cranberry concentrate, or soaked dried cranberries that have no sugar or added preservatives.

Creamy Ginger Vinaigrette

Makes 1½ cups

Ingredients

- ½ cup olive oil
- 1 cup white wine vinegar
- 10 drops stevia or 1 tablespoon honey
- 2 teaspoons fresh grated ginger
- Pinch of cayenne pepper
- ⅓ teaspoon freshly ground black pepper

Directions

1. Combine all ingredients in a jar with a tight-fitting lid. Shake well.
2. Store in the refrigerator and use within 2 weeks.

Creamy Dill Dressing

Avocados are rich in fats for the brain and skin. In Mexico, avocados are called “poor man’s butter.” Dill is a carminative, which means it helps digestion and reduces gas. Cayenne pepper also stimulates digestion and brings blood and oxygen to the stomach lining. This dressing may be used over any type of raw vegetable salad, or leave out the water and use it as a vegetable dip.

Makes 1½–2 cups

Ingredients

- 1 avocado
- ½ cup–1 cup water, as desired for consistency
- 2 tablespoons olive oil
- 2–3 tablespoons fresh dill
- 1–2 tablespoons lemon juice
- ½ teaspoon Celtic salt
- 2 tablespoons fresh chives, minced (optional)
- Dash of cayenne (optional)

Directions

In a blender, process all ingredients until smooth and creamy. Use within 24 hours.

Lemon Tahini Dressing

Makes 1 cup

Ingredients

¼ cup flax oil
¼ cup olive oil
½ cup lemon juice
1 tablespoon raw tahini
2 teaspoons dill
½ teaspoon sea salt
Freshly ground black pepper, to taste
Dash of cayenne pepper (optional)

Directions

In a blender, process all ingredients until smooth and creamy.

Note: You may like this dressing thinner or thicker—add water as needed.

Garlic and Yogurt Salad Dressing

Adapted from Jeffrey Goettemoeller, *Stevia Sweet Recipes: Sugar-Free—Naturally!* (Garden City Park, NY: Square One Publishers, 1998).

Makes 1 cup

Ingredients

¾ cup plain yogurt
1 small garlic clove, minced
¼ teaspoon dried basil
½ tablespoon apple cider vinegar
1⁄16 teaspoon green stevia powder
1 teaspoon chopped fresh parsley
4 tablespoons mayonnaise

Directions

Whisk all ingredients together in a bowl and serve. Use within 24 hours.

Appendix I

Food Allergies and Sensitivities

Contents

I.1. Gluten
I.2. Lactose, Casein, and Dairy
I.3. Corn
I.4. Histamines
I.5. Salicylates
I.6. Sulfites
I.7. FODMAPs

I.1. Gluten

Foods That Often Contain Gluten		
Beer Blue cheese (check with the company; many are fine but not all) Bouillon cubes Bran Bread, breading, breadcrumbs Broth Brown rice syrup (frequently made from barley) Cakes Candies Caramel color (infrequently made from barley) Cereal Coating mixes Communion wafers Cookies Couscous	Flour or cereal products Flour tortillas Fried foods Gravy Hot dogs Hydrolyzed vegetable protein (HVP), vegetable protein, hydrolyzed plant protein (HPP), hydrolyzed soy protein, or textured vegetable protein (TVP)—label will say “wheat” Imitation bacon Imitation seafood Lunch meats Malt or malt flavoring (usually made from barley) Malt vinegar	Pastas Pastries Processed meats Rice Dream (processed with barley) Roux (a sauce base made with wheat flour) Salad dressings Sauces Sausages (some) Seasoned chips and other seasoned snack foods Seasoned rice and pasta mixes Seitan Self-basting poultry Soup bases Soy-based veggie burgers Soy sauce or soy sauce solids (wheat-free is

Foods That Often Contain Gluten		
Crab cakes Crackers Croutons Dextrin (usually derived from corn but may be from wheat) Dressings Dry roasted nuts (processing agents may contain wheat) Emergen-C (in raspberry and mixed berry flavors only, the other flavors are fine)	Marinades Matzo Meatballs Meat loaf Meat substitutes (Tofurky and others) Modified food starch (label will say “wheat”) Monosodium glutamate (MSG) Muffins Oats (see Section on oats below)	available) Starch (label will say “wheat”) Stuffing Tamari Textured vegetable protein (TVP; label will say “wheat”) Thickeners Vital wheat gluten found in imitation meats Ricola cough drops

Gluten and Gluten-Free Alternatives			
Contains Gluten		**Gluten-Free**	
Barley Bulgur Couscous Durum wheat Farina Graham flour Kamut Matzo	Oats* Oat bran* Oat fiber* Rye Seitan Semolina Spelt Triticale Wheat Wheat bran Wheat germ Wheat grass White flour Whole wheat flour	Amaranth Arrowroot Beans Buckwheat Corn Flax Garfava Millet Nut flours Potato Quinoa	Rice Sorghum Soy Tapioca Teff

*Oats must be certified gluten free, because oats are commonly manufactured with wheat.

I.2. Lactose, Casein, and Dairy

Foods That Often Contain (Hidden) Lactose	
Bread and other baked goods Breakfast cereals Breakfast drinks Candies Chips (potato, corn, and other) Liquid and powdered milk-based meal replacements	Prescription drugs (birth control pills, thyroid medication, gastrointestinal medications) Processed breakfast foods (frozen waffles and pancakes, doughnuts) Processed meats (bacon, sausage, hot dogs, and lunch meats) Protein powders and bars

Foods That Often Contain (Hidden) Lactose	
Nondairy liquid and powdered coffee creamers Nondairy whipped toppings Instant potatoes Instant soups Margarine	Salad dressings Waffles, pancakes, biscuits, cookies, and mixes to make them Vitamins (many kinds)

Foods and Ingredients That Contain Casein	
Butter, butter flavoring, butter fat Calcium casein, casein hydrolysate, magnesium casein, potassium casein, rennet casein, sodium casein Cheese flavoring Custard Dairy products like cheese, yogurt, milk, kefir, ice cream, sour cream, half & half, and cream	Lactalbumin, lactalbumin phosphate, lactaglobulin, lactose Margarine Milk chocolate Nondairy creamers Powdered milk Protein powder Pudding Sherbert Whey, whey hydrolysate

Casein-Free Dairy and Nondairy Foods	
Coconut butter Coconut milk Foods certified as kosher nondairy or pareve/parve Ghee (look for casein-free guaranteed) Fruits and vegetables Italian ices	Pareve/parve creams and creamers Proteins like meat and fish (read labels if processed or packaged) Rice-, soy-, nut-, oat-, or potato-based milks Sorbet (read label) Soy, rice, and coconut ice cream (not all flavors) Whole grains in their natural state

Dairy Foods and Their Alternatives	
Dairy Foods	**Substitutes**
Cheese	Nondairy cheeses (made from nuts, hemp, soy,* and rice—look out for “casein” or “caseinate,” a milk protein used in cheese substitutes if you have a milk allergy as opposed to a lactose intolerance) Goat or sheep cheese (if tolerated) Nutritional yeast
Milk	Nondairy milks such as soy,* oat, coconut, hazelnut, almond, rice, and hemp milk Goat milk (if tolerated)
Kefir	Nondairy kefir products

Dairy Foods and Their Alternatives	
Butter and margarine	Vegan butter,* ghee (usually casein/lactose free), goat butter (if tolerated), coconut oil
Nondairy coffee creamer (contains casein)	Try coconut or soy* coffee creamers
Ice cream	Rice, soy,* hemp, coconut, or almond ice cream
Sour cream	Nondairy sour cream*
Yogurt	Coconut, soy,* or rice yogurt with live cultures

* Soy is often found in dairy substitutes but has been linked to severe negative health effects. Unfermented soy contains antinutrients such as saponins, soyatoxin, phytates, trypsin inhibitors, goitrogens, and phytoestrogens. Phytic acid, found in high amounts in soy, suppresses digestive enzymes; it also depresses thyroid function (Fallon & Enig, 1999) and is high in protease inhibitors, which suppress pancreatic enzymes. Soybeans also contain hemagglutinin, which causes red blood cells to clump. Soy should be avoided (Fallon & Enig, 1999) except in fermented soy products such as miso, shoyu, and tempeh, and then only in very small quantities and on rare occasions. The antinutrients are destroyed during fermentation, so fermented soy products are more easily tolerated and can provide many health benefits. Another reason to avoid soy is that nonorganic soy is heavily sprayed with pesticides and is almost always genetically modified unless specifically labeled otherwise.

I.3. Corn

Products and Ingredients Commonly Containing Corn		
Beverages	Hydrolyzed corn	Sorbitol (derived from corn, used in toothpaste, gum)
Candies	Hydrolyzed corn protein	Syrups
Canned fruits	Iodized salt (dextrose)	Tea bags (corn is used to adhere the tea bags together)
Cereals	Jams	Toothpaste
Citric acid (organic applesauce)	Maize	Vanilla extract
Corn alcohol	Malt syrup from corn	Vegetable oils
Corn extract	Maltitol (derived from corn, used in gum)	Vitamin D (in fortified milk)
Corn gluten	Modified cornstarch	Vitamin E
Corn meal	Monosodium glutamate (MSG)	Wax used on vegetables (cucumbers)
Corn solids	Mineral-enhanced water	Yeast packets (as ascorbic acid)
Cornstarch	Natural flavors	*Zea mays* (corn genus/species)
Corn sweetener	Perfume	Zein (corn protein)
Corn syrup	Prepared meats like hot dogs and deli meats	
Corn flour	Popcorn	
Corn/vegetable oil	Sauces	
Dextrose	Shampoo	
Envelopes (the gum used to seal an envelope)		

Products and Ingredients Commonly Containing Corn	
High-fructose corn syrup (used to sweeten everything from yogurt to salad dressings)	Snack foods Soaking pads for fresh meat products

Corn Foods and Their Alternatives	
Corn Foods	**Substitutes**
Baking powder	Corn-free baking powder
Corn flour	Wheat, spelt, rice, oat, coconut, amaranth, or potato flour
Corn oil	Olive oil, coconut oil, safflower oil, sesame oil
Corn starch	Tapioca starch, arrowroot powder, potato starch
Corn syrup/sweeteners	Stevia, honey, maple syrup, brown rice syrup, agave syrup, cane sugar
Corn tortillas	Wheat, spelt, brown rice, teff, or coconut flour tortillas
Vanilla extract	Corn-free vanilla extract

I.4. Histamines

Foods Containing Histamines	
Alcohol Artificial food colors and preservatives Berries (most types) Chocolate, cocoa, and cola drinks Citrus fruits (oranges, grapefruit, lemons, lime) Eggs Dried fruit Fermented foods: sauerkraut, kombucha, pickles, relishes, fermented soy products, etc. Fermented milk products, including most cheeses Leftover meat (as cooked meat sits, histamine levels increase due to microbial action)	Processed, cured, smoked, and fermented meats such as lunch meat, bacon, sausage, salami, pepperoni Seafood: shellfish or fin fish, fresh, frozen, smoked, or canned Spices: cinnamon, chili powder, cloves, anise, nutmeg, curry powder, cayenne pepper Spinach Tea (herbal or regular) Tomatoes and tomato products like ketchup and tomato sauces Vinegar and foods containing vinegar such as pickles, relishes, ketchup, and prepared mustard Yogurt, buttermilk, kefir

I.5. Salicylates

Foods High in Salicylates	
Beverages: apple cider, beer, coffee, liquor, orange juice, port, tea (regular and herbal), rum, sherry, wine **Fruits:** all dried fruits; apples, apricots, avocados, blackberries, blackcurrants, blueberries, boysenberries, cherries, cranberries, currants, dates, figs, grapefruit, grapes, guava, kiwi fruit, oranges, peaches, raspberries, pineapple, plums, strawberries, cherries, prunes, raspberries, red currants, tangelos, tangerines, tomatoes	**Herbs, spices, and condiments:** dry spices, dried herbs, jams and jellies, powders, soy sauce, tomato pastes and sauces, vinegar **Nuts:** almonds, Brazil nuts, macadamia nuts, peanuts, pine nuts, pistachios, water chestnuts **Sweets:** fruit flavors, gelatin, honey, ice cream, jam, licorice, mint-flavored gum, breath mints and peppermints **Vegetables:** alfalfa, artichokes, broad beans, broccoli, canned olives, cauliflower, chicory, cucumbers, eggplant, hot peppers, mushrooms, okra, peppers, radishes, spinach, tomatoes, zucchini, water chestnut, watercress

Products That May Contain Salicylates	
Alka Seltzer Cosmetics like lipsticks, lotions, and skin cleansers Fragrances and perfumes Herbal remedies	Mouthwash and mint-flavored toothpaste Muscle pain creams Shampoos and conditioners Shaving cream Sunscreens or tanning lotions

Ingredients That Contain Salicylates	
Acetylsalicylic acid Artificial food coloring and flavoring Aspirin Benzoates Beta-hydroxy acid Magnesium salicylate Menthol	Mint Peppermint Phenylethyl salicylate Salicylic acid Sodium salicylate Spearmint

I.6. Sulfites

Foods Containing Sulfites	
Apple cider Baked goods Beer (most do not contain sulfites) Bottled lemon juice and lime juice Canned vegetables Condiments (many)	Maraschino cherries Molasses Pickled foods Potato chips Shrimp (sometimes treated with sulfites) Soup mixes

Foods Containing Sulfites	
Dehydrated, precut, or peeled potatoes	Sparkling grape juice
Dried fruit	Tea
Gravies	Trail mix
Guacamole	Vegetable juices
Jams	Wine

I.7. FODMAPs (*Oligosaccharides*)

Foods Containing FODMAPs	
Oligosaccharide	**Foods**
Fructans	*Grains and cereals:* wheat (in large amounts, e.g., bread, pasta, cereals), rye, barley *Vegetables:* artichokes, asparagus, broccoli (especially stems), Brussels sprouts, garlic, leeks, onion, shallots *Fruits:* persimmon, watermelon *Other:* inulin (added to processed foods as fiber), chicory root (common additive in some coffee substitutes)
Galacto-oligosaccharides (GOS)	*Legumes*: lentils, chickpeas, kidney beans, black beans, soybeans, split peas
Disaccharides: Lactose (Milk Sugar)	*Dairy products*: milk (cow's, goat's, and sheep's milk), soft cheeses (e.g., ricotta, cottage cheese), yogurt (regular and some Greek varieties), ice cream, cream, sour cream, butter (contains small amounts)
Monosaccharides: Excess Fructose	*Fruits (high in fructose)*: high-fructose fruit juices (e.g., apple juice, pear juice); apples, blackberries, cherries, mango, pears, watermelon *Sweeteners*: honey, high-fructose corn syrup (HFCS), agave syrup *Vegetables (high in fructose)*: sugar snap peas
Polyols (Sugar Alcohols)	**Sorbitol:** *Fruits*: apples, pears, peaches, plums, nectarines, cherries, apricots *Artificial sweeteners*: sugar-free gum, sugar-free candies **Mannitol:** *Vegetables*: mushrooms, cauliflower, snow peas **Xylitol:** *Fruits (small amounts)*: berries, plums, mushrooms *Artificial sweeteners*: sugar-free gum, sugar-free mints, some toothpaste and mouthwashes **Maltitol:** *Artificial sweeteners*: sugar-free chocolates, sugar-free candies, baked goods with sugar substitutes

Appendix J

Assessing Thyroid Function

Blood Tests

A blood test can be conducted to determine the level of thyroid-stimulating hormone (TSH) released by the pituitary.

Achilles Reflex

A delayed Achilles return reflex is a classic sign of hypothyroidism, along with the other noted symptoms.

Iodine Skin Test

A 2% solution of iodine is painted onto the skin, and the skin is watched to see how quickly it absorbs the available iodine. The quicker the iodine fades, the greater the hypothyroid deficiency.

Barnes Thyroid Temperature Test

This test may be conducted at home every morning for five days using a thermometer. It measures functional hypothyroidism, which is not always identified by blood tests. This test was developed by Broda O. Barnes, MD, PhD, a practicing physician in Colorado. Dr. Barnes believes it is superior to standard blood studies for evaluating thyroid function. Blood tests measure only pituitary (TSH) and T_3 hormone blood levels, whereas temperature readings measure how much energy is generated in cells.

Barnes Thyroid Test Instructions

Shake down the thermometer the night before and place it on your night table. In the morning, before getting out of bed, tuck the thermometer in

your armpit and lie very still for 10 minutes.

Indicate the first day of your menstrual period by circling the temperature on the chart for that day. Indicate the last day of your menstrual period by making an “X” through the temperature on the chart.

If the thyroid is overactive (or you have a fever), your temperature will be 1–2 degrees above normal. If the thyroid is underactive, your temperature will be 1–2 degrees below normal.

The average underarm temperature is 36.6–36.8°C. If your temperature is consistently below this level, blood tests for thyroid function are indicated. However, results for these tests are often standard, even if the thyroid gland is malfunctioning. That is because the tests show only how much thyroid hormone is circulating in the blood and tell nothing of how well the hormones function on a cellular level. Additionally, up to 70% of thyroid function loss may occur before blood tests become abnormal.

Appendix K

Elimination and Modified Elimination Diets

K.1. Guide to foods on the Elimination Diet

Guide to Foods on the Elimination Diet		
Foods to Include in the Diet	**Foods to Eliminate From the Diet**	
Buckwheat Coconut milk (unsweetened) Coconut oil Cold-pressed olive oil Fish Flaxseed oil Fresh water Fruits (fresh) Herbal teas Herbs and spices Lamb Rice Rice milk (unsweetened) Sea salt Stevia Sweet potatoes or yams Turkey Vegetables (raw, steamed, sautéed, or roasted) Wild game	Alcohol Beans (all beans—soybeans, tofu, tempeh, peas, lentils) Caffeine (coffee, black tea, green tea, yerba mate, soda) Canned meat and fish products Chocolate Citrus fruits Eggs Gluten—wheat, barley, spelt, kamut, rye, oats (unless gluten-free), and any other products containing gluten[a] Hydrogenated oils Margarine Mayonnaise Meats (beef, chicken, pork, cold cuts, bacon, hot dogs, sausage; except turkey) Meat substitutes (made from soy or gluten)	Condiments (ketchup, mustard, soy sauce, vinegar, relish, chutney, barbecue sauce) Corn Dairy—milk, cream, cheese, yogurt, butter, cottage cheese, kefir, ice cream, nondairy creamer Nightshade vegetables (tomatoes, eggplant, potatoes, bell peppers, chili peppers, paprika) Nuts Seeds Shellfish Sweeteners (honey, sugar, maple syrup, corn syrup)

[a] See Section I.1 on gluten in Appendix I for a full list of foods to avoid and a list of more acceptable foods.

K.2. Guide to the Modified Elimination Diet

Foods to Include in the Diet	Foods to Avoid in the Diet
Baked goods and cereal products made from gluten-free flours (e.g., buckwheat, corn, potato, coconut, tapioca, rice, teff)[a] Chicken Cold-water fish (salmon, mackerel, halibut) Fresh fruits (except for citrus fruits and strawberries) Noncitrus herbal teas Juices (unsweetened) from fruits (except citrus) and vegetables Lamb Legumes (all) Nut and rice milks Oils—cold/expeller-pressed, unrefined (e.g., ghee, flax, olive, coconut, sesame) Vegetables Water Yogurt—unsweetened live	Alcohol Citrus juices and citrus fruits Coffee, tea, soda, cocoa, sweetened beverages, decaffeinated coffee, herbal coffee Dairy—milk, cheese, ice cream, cream, nondairy creamers Dried fruits Eggs Fruit drinks Gluten and all foods containing gluten[a] Peanuts Processed meats Refined oils, margarine, shortening, butter, peanut oil Red meat Salad dressings Spreads Strawberries

[a] See Section I.1 on gluten in Appendix I for a list of more acceptable foods and a full list of foods to avoid.

Appendix L

Kicking the Coffee (Caffeine) Addiction

Understanding Coffee as a Drug

Diet Essential: *Coffee is a drug, not a beverage, so use it wisely.*

Coffee, a favorite beverage in our culture, enhances mood, stimulates alertness, and increases mental performance. However, it contains hundreds of chemicals, including the powerful and well-known caffeine, an addictive chemical that is known to cause several adverse health effects. It should be used in moderation, if at all. Not only does the coffee bean contain naturally occurring chemicals, but nonorganic coffee may also contain traces of pesticides, herbicides, and other harmful chemicals that can harm your body and the environment and communities where it is grown. Although nearly caffeine-free, decaffeinated coffee still contains naturally occurring chemicals and toxic chemicals such as methylene chloride used in decaffeination. Although there are some proven health benefits to drinking organic coffee, it should be consumed in moderation (1–2 cups a day) due to its addictive qualities and potential for adverse effects on health. Espresso has less caffeine than drip coffee. People with anxiety or panic should avoid coffee; however, people who are depressed, have ADHD, or need cognitive support may benefit. Other beverages contain caffeine as well (see Table L.1).

TABLE L.1
Caffeine Content Chart

Beverage	Serving Size (oz)	Caffeine Content (mg)

Beverage	Serving Size (oz)	Caffeine Content (mg)
Coffee (brewed)	8	102–200
Black tea	8	23–110
Yerba mate	8	110
Soft drinks	12	23–71
Green tea	8	20–30
White tea	8	15
Cocoa beverage	8	3–32
Dark chocolate	1	5–35

Short-Term Negative Effects

- Restlessness, anxiety, and nervousness
- Increased blood pressure
- Sleep disturbances
- Increased heart rate
- Irregular heartbeat
- Nausea and headache
- Muscle tension
- Increased acidity
- Adrenal fatigue (see below)
- Frequent urination
- Jitteriness
- Lightheadedness
- Diarrhea
- Upset stomach
- Irregular breathing
- Heartburn

Adrenal Fatigue

Caffeine raises the body’s adrenaline levels and can lead to adrenal exhaustion. The adrenal glands regulate stress response, but when the adrenals are overworked, it becomes difficult to respond effectively to

stress because they cannot efficiently produce the necessary hormones. Imagine your foot pressed on the accelerator while your car is on and sitting in neutral. Eventually, this will cause the engine to burn out. Your adrenal glands are like your body's engine, ready to pump hormones in response to environmental stressors. When the adrenal glands are repeatedly overstimulated, which can occur with regular coffee drinking (and stress), they become less efficient.

Long-Term Negative Health Effects of Caffeine

- Heartburn
- Ulcers
- Fibrocystic breast disease
- Heart problems
- Heart disease

Caffeine Withdrawal Symptoms

- Headache
- Fatigue
- Anxiety
- Nausea and vomiting
- Loss of appetite
- Intense desire for coffee
- Irritability
- Intensified premenstrual symptoms
- Muscular tension
- Constipation
- Lack of concentration
- Disorientation
- Forgetfulness

Health Benefits of Drinking Coffee

Although there are many studies showing coffee's negative effects, there are also a number of studies indicating that coffee, if moderately consumed, may actually be beneficial. The following is a list of some potentially beneficial effects of moderate coffee consumption:

- Reduced risk of gallstone development
- Reduction in colon cancer risk
- Improved cognitive function
- Reduced risk for Parkinson's disease
- Improvement in physical endurance
- Reduced risk of liver damage
- Treatment for headaches, asthma, and mood enhancement

A Protocol for Withdrawal: Three Methods to Kick the Caffeine Habit

These methods will help you avoid the common withdrawal symptoms of quitting coffee. Choose the method that best fits personal taste and habits.

Decaf Coffee Method

- Week 1: Using all organic coffee, brew ¾ regular coffee to ¼ decaf coffee.
- Week 2: Reduce the ratio to ½ regular coffee and ½ decaf.
- Week 3: Brew ¼ regular coffee and ¾ decaf.
- Week 4: Transition to completely decaf coffee, and you will be caffeine-free!

Lowered Caffeine Method

- Week 1: Instead of coffee, brew a caffeinated coffee substitute—these will all have less caffeine than coffee and will help in the transition. See Table L.2 for coffee substitutes.
- Week 2: Replace half of your cups of caffeinated coffee substitute with a caffeine-free coffee substitute or herbal tea.
- Week 3: Completely replace your caffeinated coffee substitute with a caffeine-free choice and thank yourself for overcoming the addiction!

TABLE L.2
Coffee Substitutes

Beverage	Caffeinated?	Ingredients

Beverage	Caffeinated?	Ingredients
Inka	No	Roasted barley, rye, chicory and beet roots
Roastaroma	No	Roasted barley,* roasted chicory, roasted carob, cinnamon, allspice, and Chinese star anise
Teeccino	No	Carob, barley,* chicory, almonds, dates, figs, coffee flavor
Dandelion root	No	Roasted dandelion root
Dark roast yerba mate	Yes	Roasted yerba mate
Chai	Yes	Black tea, cardamom, cloves, cinnamon, ginger
Genmaicha	Yes	Green tea and roasted brown rice

*Contains gluten.

Quick and Easy Method

- Week 1: Replace half of your cups of coffee with herbal tea or a caffeine-free coffee substitute.
- Week 2: Brew just one-quarter of your original coffee intake and replace the rest with a caffeine-free choice.
- Week 3: Drink only caffeine-free coffee substitutes or herbal tea and be caffeine-free!

And If You're Still Needing an Energy Boost . . .

These naturally energizing and stimulating herbs and plants can easily be incorporated into your diet:

Licorice root: Sweet, energizing, and detoxifying; use it in cases of adrenal gland insufficiency.

Rhodiola: Reduces fatigue; improves physical and mental performance; adaptogenic (increases the body's resistance to stress).

Ginseng: Adaptogenic and stimulating root; improves memory, concentration, and focus.

Schizandra: Adaptogenic and mood enhancing; improves learning ability, memory, and mental function.

Cacao: Increases blood circulation and improves mood; contains magnesium, sulfur, and antioxidants.

Maca: Adaptogenic, energizing, and increases endurance; with fatigue, sexual function, anxiety, and stress.

Note: Prescription and over-the-counter drugs also contain caffeine. Mixing caffeine with other drug ingredients like phenylpropanolamine (ephedrine) can cause severe hypertension, stroke, and myocardial infarction. How we metabolize coffee is governed by our genetics, specifically our CYP1A2 gene. People with two copies of the A variant will metabolize fast and will be less likely to suffer ill effects from coffee.

Appendix M

Tapering From Psychotropic Medications

M.1. Readiness to Taper Checklist

Purpose

In my experience, people can taper and even eliminate psychotropic medications successfully. But many people, especially those who have been on medications for years, return to their medications when they experience discomfort or what they feel is a return of symptoms. Successful tapering requires education about the drugs and discontinuation process, a robust self-care routine, support (or a taper team), and patience to tolerate going slowly. The most crucial element of successful tapering and maintenance is the pace of the taper, which is much slower than often suggested by the prescriber. Tapering is not only about chemistry. It is about addressing the negative beliefs about the need for a lifetime of medications, usually reinforced by physicians, family, and therapists' drugs. The first step is to assess readiness, attitudes, and what therapeutic work will set the foundation for success.

Instructions

Complete the sections below to help you assess whether your client is ready to begin the tapering process.

Client Name:
Date of Birth:
Intake Form Attached: ☐ Yes ☐ No

Key Information for Tapering Process

Discuss the following key questions with the client during your initial conversation(s) about tapering off of medications.

- How many different medications is the client taking?
- How many months/years has the client been using the medication(s)?
- What is the order of priority for tapering?
- What are the stress levels present in the client's life, including acute perturbations?
- What social supports are in place to assist the client in successfully carrying out the plan?
- What does the client identify as optimal and achievable?
- What do you, as the clinician, identify as optimal and achievable?
- List medications and what is known about their half-life and tapering process:

  _____
  _____

  _____
  _____

  _____
  _____

  _____
  _____

Clinical Pearl: It's important to discuss with the client that you will not work with someone to taper off of medications unless their prescriber is on board. See the dialogue prompts below for guidance on having a productive conversation with a prescriber about tapering.

Readiness Checklist

Have you done the following?

- ☐ Assess medication benefits
- ☐ Assess lack of benefits hoped for
- ☐ Assess current side effects
- ☐ How have things changed over time using the medication(s)?
- ☐ Rituals of self-care must be in place
- ☐ Education about self-care and "pill mentality"

- ☐ Overcome the dissociation
- ☐ Challenges/benefits of online groups
- ☐ Balanced discussion of withdrawal syndrome

Beyond Chemical Withdrawal

Often, we think that coming off of medication is simply stopping medication and coping with the side effects or hoping to avoid a return of symptoms. Clients can be hypervigilant looking for any "signs and symptoms." We can often address the psychobiological needs more effectively than the long-term beliefs or fears by those around the client. A successful taper must include those as well. They include:

- ☐ Fear: people around the client who are afraid the client will relapse or who believe the client must always be on meds; these include the prescribers who tell them they need it for life, and family members who are afraid and share their fears with the client.
- ☐ Identity: many people use meds for years, even decades, and requiring medication becomes part of their identity. This requires a process of change and takes time to forge a new concept of self without meds.
- ☐ Clinician fear.

Once you've determined that the client is ready to begin the tapering process, be sure to have them fill out the Recruiting Your Taper Team worksheet (see Section M.2). Then work with the client to develop a realistic plan using the Taper Calendar (see Section M.3).

Reflection

Considering the information that you've gathered during the completion of this worksheet, identify potential obstacles and when they might appear during the tapering process. Then, brainstorm potential actions that you could take with the client to overcome these obstacles.

Potential Obstacles	Timeline	Actions

Potential Obstacles	Timeline	Actions

M.2. Recruiting Your Taper Team

Purpose

Tapering off of medications can be a stressful, taxing process, and should not be done alone. Before people begin the process of tapering off of medications, it is important that they have a solid support system in place.

Instructions

This worksheet will help you to identify your *taper team*, the people in your life who can support you during the process of tapering off of medications. Discuss with your therapist or prescriber who will be part of the team. Fill in the provided roster with the names of people who make up your support system, along with their contact information and how they might be able to support you during the tapering process (see Table M.1).

Be sure to have open conversations with the people on your taper team about how long the tapering process might take, what they should expect throughout the tapering process, and what you might need from them during it. Take notes about your conversations in the worksheet. Keep your taper team roster handy throughout the process of tapering off of medications!

Clinical Pearl: Take your time tapering. Time is the number one determinant of success! It's a marathon, not a sprint. There's no rush—you will be successful. If it takes a year, that's okay; if it takes two years, no problem.

TABLE M.1
Taper Team Members

Name:
Relationship:
Contact info:
Support:
Conversation notes:

Instructions: Use this table to list the names of people who will serve on your taper team. Ask them to support you, define what you need, and obtain their agreement and confirm contact methods.

Dialogues for Recruiting Your Taper Team

Dialogue for Friends and Family

Now, consider what you want to say to members of your taper team when inviting them to support you. It can be helpful to write it out and then read it beforehand or practice out loud. Use the example dialogue and ideas below to get started.

> I wanted to talk to you because I am working with my therapist and prescriber to taper off some/all of my medications. I have been on #_ of medications for #_ of years. I am developing a plan to reduce and eliminate these medications over the next #_ months. My therapist and I agree that having a Taper Team, people who will support me to achieve this goal, will be important to my success.
>
> "Because of our relationship as _, I feel you would be an important/essential/vital member of my team. I'd like to tell you briefly how I think you can help. . . ."

Ideas for Prompting a Discussion About How Someone Can Support You

- "If I feel anxious/fearful/stressed, can I call you up once a day/week to talk through how the tapering process is going?"

- “If I’m having a hard day, would we be able to meet somewhere or video call, so that we can see each other and talk face to face?”
- “Would you be able to accompany me to some of my appointments?”
- “Could we plan to . . .”
  - go for a walk together for #_ minutes a week/every other week?”
  - cook a meal together once a week?”
  - share tea or coffee once a week?”
  - do a self-care activity together at least twice a week?”
  - commit to an exercise class/exercise routine that we hold each other accountable for?”

“I really appreciate that you took the time to talk through this with me. I made the decision to taper based on my well-being/long-term health/etc., but I know that it can be difficult to carry this out. I’m so glad that I have you to support me!”

Dialogue for Prescriber

This dialogue can be used to talk with your prescriber about your wish to reduce, taper, and/or eliminate a particular medication or all medications.

Initiating the Conversation

“We have been working together for ___ months/years and I have been on the following medications. As you know I have been experiencing side effects, such as:

_____

_____

_____

_____ _____, and have been improving as a result of therapy and my self-care program.”

“I have been wanting to reduce or eliminate medications, and my therapist and I want to engage your support so that I can be successful doing so. I have done research on how to do this and I’d like to review my plan with you and also obtain your ideas. I understand that going slowly ensures my success.”

“I’d like to begin by reducing _____ medication first, and then _____ medication.”

Prescriber Response Scenario 1

“I think this is a great idea and I am happy to support the process. Here is what I suggest . . .”

Continuing the Conversation

“Thank you. I am so happy that you are part of my taper team.”

“My taper advisor suggests that I can also obtain this medication at a compounding pharmacy in liquid form, which makes it easier to taper ml by ml.”

“Would you be willing to call in a script for this? The compounding pharmacy name is _____”

“Is my plan to taper _____ by a ml every 2 weeks feasible in your opinion?”

“Would you be available to talk to my therapist at some point so that we are all on the same page as far as my process?”

“I have a plan which can be adjusted and I’d like to look to you for any advice as I go through this process. What is the best way to do this? Should we schedule an appointment or may I touch base with a quick question?”

Prescriber Response Scenario 2

“I don’t think that this is a good idea. The reason you are feeling better is because of the medications. I can’t support you stopping any of your medications.”

Continuing the Conversation

“Is it possible for you to consider that I want to reduce and eventually stop these medications, or do you think it’s better if I find a provider who is willing to work with me to do so?”

M.3. Taper Calendar

Purpose

Setting a schedule that you and your client agree on is crucial for tapering off of medications effectively and safely. Filling out a tapering calendar

allows for you and your client to discuss their goals and the time in which they can be achieved.

Instructions

Take time to fill out the blank calendar, setting goals for tapering off of medications. Include specific dosages/pill amounts. After creating the calendar together, your client will have a weekly schedule to follow; ask them to keep track of how they are feeling by making notes on the calendar and bringing it to your follow-up appointments.

Clinical Pearl: During tapering, a clinician or other team member will identify days, times, and methods of communication (phone/text/email) where he/she/they are available to respond to the person tapering in order to help them manage their anxiety and fears.

Taper calendar template to use with clients

Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:
Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:	Date: Dosage:
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Appendix N

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N.1. Protocol for Depression

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–2 g b.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–125 mcg (2,000–5,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Vitamin B-6 (pyridoxal 5'-phosphate)	50 mg q.i.d.
Methylcobalamin	1–2 mcg o.d.
Lithium orotate	50–150 mg o.d.[d]
Magnesium	400 mg o.d.[e]
5-HTP	50–100 mg o.d.
L-Tyrosine	250–500 mg b.i.d.[a]
Adrenal glandular	100–200 mg t.i.d.
Hypothalamus glandular	500–1,500 mg b.i.d.
Lactium	300–450 mg o.d.[f]
Orthophosphoric acid	30 drops o.d.[g]
Rubidium	100 mcg o.d.

[a]Take away from food.
[b]Oral, once per week for 8 weeks (for deficiency).
[c]For maintenance.

[d]Combined with folate.
[e]Take magnesium to bowel tolerance. More magnesium at bedtime aids sleep.
[f]Take before bed.
[g]Take in the morning in water.

N.2. Protocol for Bipolar Disorder

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.
Magnesium	200 mg t.i.d.
Lithium orotate	20–50 mg b.i.d.
Citicoline	500 mg b.i.d.
CoQ10	200 mg t.i.d.
Inositol	1,000–2,000 mg b.i.d.

N.3. Protocol for Seasonal Affective Disorder (SAD)

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening	1,000 mg o.d.

Nutrient	Dose
primrose oil	
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.
Vitamin B-6 (pyridoxal 5'-phosphate)	50–100 mg o.d.
Tryptophan	500–1,000 mg o.d. at night
Melatonin	0.5–1 mg o.d. at night
SAM (optional)	400–600 mg o.d.
Whey protein	2 heaping tablespoons o.d.

N.4. Protocol for PMS and PMDD

Nutrient	Dose
Active B Complex	1 cap b.i.d.
Vitamin B-6 (pyridoxal 5'-phosphate)	100 mg o.d.
Magnesium glycinate	400 mg o.d.
Black currant seed oil	1,500 mg o.d.
Free amino acids	2 capsules/d, 20 mg 5-HTP per capsule
5-HTP	50–100 mg b.i.d.
Chasteberry (Vitex)	400 mg b.i.d.

N.5. Protocol for Postpartum Depression/Psychosis

Nutrient	Dose
Active B complex	2 caps b.i.d.
Niacinamide	1 g b.i.d.

Nutrient	Dose
Omega-3 fatty acids (DHA rich)	1,500 mg o.d.
Vitamin C	2–3 g b.i.d.
Vitamin D	250 mcg (10,000 IU)/d
Magnesium threonate	1–15 mg/d
Citicoline	2,500 mg o.d.
Zinc	50 mg/d
Glycine	5 g b.i.d.
NAC	1,500 mg o.d.
Ashwagandha	600 mg at night
CBD-rich cannabis	1:1 or 2:1 ratio CBD:THC p.r.n.

N.6. Protocol for Anxiety

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	Deficiency: 1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) Maintenance: 50–100 mcg (2,000–4,000 IU) o.d.
Vitamin B-6 (pyridoxal 5'-phosphate)	50 mg b.i.d.
B-12 methylcobalamin	1,000 mcg o.d.
Niacinamide (optional)	500 mg b.i.d.
Magnesium L-threonate or glycinate	100–400 mg[b]

Nutrient	Dose
Alpha GP-choline	600–1,000 g o.d.
Tryptophan	500 mg[c]
Lactium	150–450 mg as needed 450–600 mg for sleep
Orthophosphoric acid (optional)	30 drops o.d.[d]
Adjunct Protocol for Anxiety	
Lithium orotate (depression and mood lability)	5–45 mg o.d.
Taurine (high blood pressure or gallbladder issues)	500–1,000 mg t.i.d.
Glycine strips (acute panic)	2 g (sublingually) every few minutes
Adrenal glandular stress	100 mg b.i.d. or 200 mg t.i.d.
Oral micronized progesterone (prescription only, for menopausal women)	100–300 mg o.d. at bedtime
Phosphatidylserine (for PTSD)	100 mg t.i.d.

[a]Take magnesium to bowel tolerance. More magnesium at bedtime aids sleep.
[b]Take before bed.
[c]Take in the morning combined with water.
[d]Take away from food. For short term, acute, or jump-start (4 weeks).

N.7. Protocol for Obsessive-Compulsive Disorders

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.

Nutrient	Dose
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D-3	Deficiency: 1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) Maintenance: 50–100 mcg (2,000–4,000 IU) o.d.
Chromium picolinate	200 mcg b.i.d.
Vitamin B-12	Injections until blood level reaches 900 g/mL; thereafter sublingual levels of B-12: 1 mg
L-theanine/lactium	100–400 mg o.d.
Melatonin	0.5 mg at night
N-acetylcysteine (NAC)	1,200–2,400 mg o.d.
Glycine	1–3 g t.i.d.
5-HTP	25–100 mg b.i.d.
L-tryptophan	500 mg at night
Inositol	1,000–3,000 mg t.i.d.
Tyrosine (for trichotillomania [TTM])	500 mg b.i.d.

N.8. Protocol for PTSD, Complex Trauma, Developmental Trauma

Nutrient	Dose
Active B complex	Take 1–2 caps/d, not to exceed 100 mg B-6 (pyridoxal 5'-phosphate) B complex compounds generally contain the following: Vitamin B-6 (pyridoxal 5’-phosphate) 50–100 mg L-methylfolate 800 mcg Methylcobalamin 2,000 mcg
Broad-spectrum minerals rich in magnesium and chromium	Includes 400 mg of Mg and 600 mcg of Cr
Omega-3 fatty acids	2 g/d, higher DHA:EPA ratio

Nutrient	Dose
Gamma linoleic acid (GLA)/borage or evening primrose oil (black currant if female reproductive challenges)	1,000–1,500 mg o.d.
Phosphatidylserine	200 mg o.d.
Free amino acids	1 capsules b.i.d., 20 mg 5-HTP per capsule
Glycine for anxiety	2 g up to b.i.d.
5-HTP for depression	50–100 mg o.d. to b.i.d.
Hypothalamus	500 mg b.i.d. (before 3 p.m.)
Adrenal	200 mg t.i.d. (before 3 p.m.)
Phosphatidylcholine (if nonalcoholic fatty liver disease)	600 mg t.i.d.
Lithium orotate	5–10 mg o.d.
Lactium (anxiety, sleep)	450–600 mg b.i.d.

N.9. Protocol for Borderline Personality Disorder

Nutrient	Dose
Omega-3 fatty acids	2–3 g o.d
Chromium	200 mcg b.i.d.
Berberine	500 mg b.i.d.
Vitamin C	2 g t.i.d.
Licorice root tea	1 cup each morning
Fish oil	2,000 mg o.d.
Vitamin D	Dose to reach optimal serum levels of 70 ng/mL
Adrenal glandular	100 mg b.i.d.
Hypothalamus glandular	500 mg b.i.d.
Ashwagandha	600 mg (evening)

N.10. Protocol for Alcohol Withdrawal and Recovery

Nutrient	Dose
Vitamins and minerals with L-methylfolate or high-dose phosphorylated thiamine B-vitamin mineral complex	Dose varies
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500 mg b.i.d.
Liver glandular	400 mg t.i.d.
Adrenal glandular	200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
Niacinamide	500 mg t.i.d.
Magnesium	400–1,200 mg o.d.[d]
Potassium	99 mg o.d.
Lithium orotate	45 mg o.d.
5-HTP	25–100 mg o.d.
Tryptophan	500 mg o.d.[e]
Melatonin	0.5–1 mg o.d.[e]
Adjunct Protocol for Alcohol Withdrawal and Recovery	
Phosphatidylcholine	800–1,200 mg b.i.d.

Nutrient	Dose
SAM	400 mg b.i.d.
Lactium (anxiety)	150–300 mg o.d.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.
[d]Take magnesium to bowel tolerance. More magnesium at bedtime aids sleep.
[e]Take before bed.

N.11. Protocol for Cannabis Withdrawal

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500–1,000 mg b.i.d.
Liver glandular	400 mg b.i.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
N-acetylcysteine (NAC)	500 mg b.i.d.

[a]Take away from food.

[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.12. Protocol for Cocaine Withdrawal and Recovery

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500–1,000 mg b.i.d.
Liver glandular	400 mg t.i.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
Gamma-glutamylcysteine	500–2,000 mg o.d.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.13. Protocol for MDMA/Ecstasy Recovery

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.

Nutrient	Dose
Thiamine (benfotiamine)	150–300 mg b.i.d.
Omega-3 fish oil (DHA/EPA)	1 g b.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500 mg b.i.d.
Liver glandular	400 mg b.i.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
β-Carotene	7,500 mcg (25,000 IU) o.d.
Bioflavonoids	500 mg t.i.d.
Vitamin E	300 mg tocotrienols b.i.d.
Selenium	500 mcg
CoQ10	300 mg b.i.d.
L-ascorbic acid	2–3 g t.i.d.
L-carnitine	1–2 g b.i.d.
N-acetylcysteine (NAC)	3 g b.i.d.
L-tyrosine	500 mg b.i.d.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.14. Protocol for Methamphetamine Withdrawal and Recovery

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500 mg b.i.d.
Liver glandular	400 mg t.i.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
Brain glandular	250 mg b.i.d.
Phosphatidylserine	100 mg t.i.d.
D,L-phenylalanine	500–1,000 mg t.i.d.
Gamma-glutamylcysteine	500–2,000 mg o.d.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.15. Protocol for Opiate Withdrawal and Recovery

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.

Nutrient	Dose
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500 mg b.i.d.
Liver glandular	400 mg b.i.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg b.i.d.
Selenium	10–50 mg o.d.
N-acetylcysteine (NAC)	3 g b.i.d.
D,L-phenylalanine	500–1,000 mg t.i.d.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.16. Protocol for Tobacco Withdrawal and Recovery

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (DHA/EPA)	1–2 g t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.

Nutrient	Dose
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) o.d.[b] 50–100 mcg (2,000–4,000 IU) o.d.[c]
Chromium picolinate	200 mcg b.i.d.
Citicoline	500 mg b.i.d.
Liver glandular	400 mg
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Hypothalamus glandular	500 mg t.i.d.
Lung glandular	400 mg t.i.d.
Vitamin C	1,000 mg t.i.d.
Vitamin E	400 mg b.i.d.
β-Carotene	7,500 mcg (25,000 IU) o.d.
Niacinamide	1,000–3,000 mg o.d.
Thiamine	4.5–40 mg o.d.
5-HTP	50–100 mg b.i.d.
Tyrosine	500 mg t.i.d.
Pregnenolone	50 mg b.i.d.
Ashwagandha	600 mg o.d.
N-acetylcysteine (NAC)	2,400 mg b.i.d.
Adjunct Protocol for Tobacco Withdrawal and Recovery	
Taurine (optional)	500 mg b.i.d.
Tincture of CBD medical cannabis (optional)	p.r.n.

[a]Take away from food.
[b]Oral, 1x/week for 8 weeks, for deficiency.
[c]For maintenance.

N.17. Protocol for Autism and Neurodevelopmental Disorders

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (EPA-rich)	1–2 g b.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	500–1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	Deficiency: 1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) Maintenance: 50–100 mcg (2,000–4,000 IU) o.d.
Chromium picolinate	200 mcg b.i.d.
N-acetylcysteine (NAC)	900 mg o.d.–t.i.d.
Glucoraphanin/sulforaphane	p.r.n.
Cholesterol supplementation	p.r.n.
Phosphatidylcholine	400–2,000 mg o.d.
Adjunct Protocol for Autism and Neurodevelopmental Disorders	
Pregnenolone (adults, for irritability)	50 mg o.d.
Tryptophan (adults)	500 mg[b]

[a]Take away from food.
[b]Take before bed.

N.18. Protocol for Attention-Deficit/Hyperactivity Disorder

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.

Nutrient	Dose
Omega-3 fish oil	Adult: 1–3 g o.d. 4–6 years: 500 mg t.i.d. 7–14 years: 1–2 g b.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	50–100 mcg (2,000–4,000 IU) o.d.
Chromium picolinate	200 mcg b.i.d.
Vitamin B-6 (pyridoxal 5' -phosphate)	50–100 mg o.d.
Magnesium threonate	2,000 mg o.d. (200 mg, elemental magnesium)
Zinc	25 mg b.i.d.
L-tyrosine	500 mg b.i.d.

N.19. Protocol for Cognitive Decline, Alzheimer’s Disease, and Dementia

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil (DHA-rich)	2–3 g b.i.d.–t.i.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.[a]
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.

Nutrient	Dose
Methylcobalamin	2,000 mcg o.d.
Vitamin E	400–600 IU b.i.d.
Lithium orotate	45 mg o.d.
Magnesium L-threonate	2,000 mg o.d. (200 mg, elemental magnesium)
CoQ10	300–600 b.i.d.
PQQ	20 mg o.d.
Acetyl L-carnitine	850 mg b.i.d.
Citicoline	1,000 mg b.i.d.
Phosphatidylserine	200 mg t.i.d.
RNA/DNA	200–400 mg o.d.
Huperzine	50–200 mcg o.d.
Vinpocetine	10–20 mg t.i.d.
Pregnenolone	50 mg t.i.d.
Curcumin	80 mg o.d.
R-lipoic acid	300 mg o.d.
Brain glandular	250 mg b.i.d.
Hypothalamus glandular	500 mg b.i.d.
Pituitary glandular	250 mg o.d.
Adrenal glandular	100 mg b.i.d. or 200 mg t.i.d.
Boron	1–10 mg o.d.
Adjunct Protocol for Cognitive Decline, Alzheimer's, and Dementia	
Melatonin	0.05–5 mg p.r.n.
Bioidentical progesterone, estrogen, and testosterone (for women)	p.r.n.
Testosterone (for men)	p.r.n.

[a]Take away from food.

N.20. Protocol for Traumatic Brain Injury and Concussion Syndrome

Nutrient	Dose
Zinc	Up to 12 mg o.d.
High dose omega-3 fatty acids	4 g orally or up to 20 g o.d. Fish oil may be dosed as high as 20 g via enteral delivery during acute phase under the direction of a prescriber
B vitamins	1.0 mg/kg
Pycnogenol	150 mg b.i.d.
Melatonin	3 mg o.d. before bed
Cannabis	p.r.n.
Choline	500 mg t.i.d.
Uridine (uridine-5'-monophosphate)	500 mg t.i.d.
Progesterone may be used for men and women with TBI (Xiao et al., 2008) under direction of prescriber	10 mg/kg IV for 3–7 days post-acute injury

N.21. Protocol for Sleep-Wake Disorders

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance

Nutrient	Dose
Chromium picolinate	200 mcg b.i.d.
B-12 methylcobalamin	1 mg o.d.
Magnesium threonate	2,000 mg o.d. (200 mg, elemental magnesium)
Lithium orotate	5 mg o.d.
Alpha-lipoic acid	200 mg o.d.
Melatonin	0.5–3 mg at night
Lactium	450–600 mg o.d. at night
5-HTP (optional)	25–200 mg o.d.

N.22. Protocol for Psychosis/Schizophrenia

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.
Glycine	4–8 g b.i.d.
Glutamine	5 g o.d.
N-acetylcysteine (NAC)	300–600 mg b.i.d.
Pregnenolone	50 mg b.i.d.
CBD-rich cannabis (optional)	p.r.n.

Nutrient	Dose
Proteolytic enzymes (optional)	500–1,000 mg every 4–6 hr (away from food)

N.23. Protocol for Anorexia

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varied t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.
Vitamin E	300 mg tocotrienols o.d.
Vitamin K	1,000 mcg o.d.
β-Carotene	7,500 mcg (25,000 IU) o.d.
Potassium	99 mg o.d.
Zinc	25 mg b.i.d.
Tyrosine	500 mg o.d.
Inositol	1,000–3,000 mg b.i.d.
SAM (optional)	400 mg t.i.d.
Carnitine	1,000 mg o.d.
Glycine	4–8 g o.d.

Note: People in recovery from anorexia may prefer a smoothie with liquid and powders added. The fat-soluble vitamins and fish oil will be liquid, the rest powders. Adjust protocol as needed.

N.24. Protocol for Bulimia and Binge Eating

Nutrient	Dose
Complex vitamins and minerals with L-methylfolate	Dose varies t.i.d.
Omega-3 fish oil	1–3 g o.d.
Gamma linoleic acid (GLA)/borage or evening primrose oil	1,000 mg o.d.
Free amino acids	Dose varies b.i.d.
Psychobiotics	100+ billion cfu o.d.
Vitamin D	1,250 mcg (50,000 IU) (oral, 1x/week for 8 weeks) for deficiency 50–100 mcg (2,000–4,000 IU) o.d. for maintenance
Chromium picolinate	200 mcg b.i.d.
Vitamin B-6 (pyridoxal 5'-phosphate)	50–100 mg o.d.
Magnesium threonate	2,000 mg o.d. (200 mg, elemental magnesium)
Zinc	25 mg b.i.d.
5-HTP	50 mg t.i.d.
Lactium	150–300 mg o.d.
Inositol	2,000 mg t.i.d.
Whey protein	2 heaping tablespoons o.d.

Glossary

Acetylcholine: This neurotransmitter transmits signals between nerve cells and muscles, enabling muscle contraction and movement and regulating cognitive processes such as memory and attention. Disruptions in acetylcholine signaling are associated with Alzheimer's disease and myasthenia gravis.

Active fluorescent units (afu): This provides a more accurate count than colony-forming units (cfu) of live, metabolically active bacteria, including those that might not grow in culture. They offer a comprehensive measure of bacterial viability and function. Counting afu might be superior for assessing the total number of viable and metabolically active bacteria, even if they don't replicate, making it potentially more relevant for newer probiotic products that include noncultivable strains.

Adaptogen: Adaptogens are herbs or plant extracts that help the body adapt to stress and maintain balance by regulating physiological processes. They enhance resilience to stress, support overall well-being, and improve mental and physical performance. Ashwagandha, *Rhodiola rosea*, licorice root, and ginseng are adaptogens.

Alexithymia: Difficulty identifying, understanding, and expressing one's emotions and/or distinguishing between emotional states and physical sensations.

Allopregnanolone: A neurosteroid derived from progesterone that regulates mood and stress responses in the brain, acting on GABA receptors and inducing calming and anxiolytic effects. Imbalances in

allopregnanolone levels are linked to mood disorders such as depression and anxiety.

Allostatic load: The cumulative physiological and psychological stress experienced by an individual due to repeated or chronic exposure to stressors, and the wear and tear on the body's systems that results. Health issues caused by high allostatic load include cardiovascular disease, metabolic disorders, and mental health conditions.

Amino acids: Organic compounds that serve as the building blocks of proteins, which are involved in muscle growth, enzyme activity, and neurotransmitter synthesis. Of the 20 standard amino acids, nine are essential and must be obtained through the diet because the body cannot produce them.

Anti-inflammatory diet: A diet designed to reduce chronic inflammation in the body. Foods rich in antioxidants and omega-3 fatty acids, such as fruits, vegetables, nuts, seeds, and fatty fish, are emphasized, while processed foods, refined sugars, saturated fats, and other inflammatory foods like nightshades are reduced or eliminated.

Antioxidant: A molecule that neutralizes free radicals, which are unstable molecules that can lead to oxidative stress and damage to DNA, proteins, and lipids. Antioxidants reduce inflammation and lower the risk of chronic diseases like heart disease and cancer. Common antioxidants include Vitamins C and E, selenium, and compounds in fruits, vegetables, and green tea.

***APOE4* allele:** A variant of the apolipoprotein E (*APOE*) gene associated with an increased risk of developing Alzheimer's disease and other forms of cognitive decline. APOE protein is involved in lipid metabolism and cholesterol transport in the brain. Individuals who carry one or two copies of the *APOE4* allele have a higher likelihood of developing Alzheimer's than those with other APOE variants, though having the allele does not guarantee the onset of the disease.

Arachidonic acid: A polyunsaturated fatty acid that is a critical component of cell membranes, serving as a precursor for synthesizing eicosanoids, signaling molecules that play crucial roles in inflammation, immune responses, and cell growth. Elevated levels of arachidonic acid and its metabolites are linked to inflammatory conditions and cardiovascular diseases.

Autonomic nervous system:

A division of the peripheral nervous system responsible for regulating involuntary physiological functions, including heart rate, digestion, respiratory rate, and pupillary response. It consists of three main branches: the sympathetic nervous system responsible for the body's "fight or flight" responses, the parasympathetic nervous system that facilitates "rest and digest" functions, and the enteric nervous system, which governs gastrointestinal functions. The ANS helps maintain homeostasis by balancing these opposing systems according to the body's needs.

Ayurvedic diet: Based on the principles of Ayurveda, this diet is tailored to an individual's dosha, or constitutional type, which is a unique combination of the three doshas: Vata, Pitta, and Kapha. This diet emphasizes fresh, seasonal, and locally sourced foods, mindful eating practices, specific food preparation methods, and food combinations, and spices and herbs to balance doshas, enhance digestion, and promote overall well-being.

Bioidentical hormones: Hormones chemically identical to those produced naturally by the human body used in hormone replacement therapy. They treat symptoms of hormonal imbalances or deficiencies, such as those associated with menopause or thyroid disorders. Unlike synthetic hormones, bioidentical hormones are derived from natural sources and designed to mimic the body's own hormones more closely, providing a more tailored and safer approach to hormone therapy.

Blood-brain barrier: A selective permeability barrier that protects the brain by regulating the passage of substances between the bloodstream and the CNS, preventing harmful substances like toxins and pathogens from entering the brain while allowing essential nutrients and gasses to pass through. The blood-brain barrier helps maintain the brain's homeostasis and can influence the delivery and effectiveness of drugs and nutrients intended for neurological conditions.

Body composition scan (DEXA; dual-energy X-ray absorptiometry): A diagnostic imaging test that uses low-dose X-rays to measure lean mass, fat mass, and bone density distribution. This scan is often used to evaluate obesity, osteoporosis, and muscle mass changes and track progress in fitness or weight loss programs.

Brain-derived neurotrophic factor (BDNF): A protein that supports the growth, survival, and differentiation of neurons in the brain and CNS. It

plays a role in neuroplasticity and cognitive functions such as learning and memory. Physical exercise, stress, and certain mental health conditions influence BDNF levels. Reduced BDNF levels are associated with neurological disorders such as depression and Alzheimer's disease.

Casein: A protein found in milk and dairy products linked with mood disorders, depression, schizophrenia, and eating disorders in individuals who test positive for casein sensitivity. About 50% of people sensitive to gluten are sensitive to casein. This is called "cross-reactivity."

Celiac disease: An autoimmune disorder in which ingested gluten, a protein found in wheat, barley, and rye, triggers an immune response that damages the lining of the small intestine, impairing nutrient absorption and causing digestive issues, fatigue, and weight loss, as well as long-term complications like osteoporosis and infertility. Adherence to a strict, lifelong gluten-free diet helps manage symptoms and prevent intestinal damage.

Central nervous system (CNS): The brain and spinal cord integrate sensory input, coordinate motor responses, and manage cognitive functions such as thought, memory, and emotion. The CNS maintains homeostasis by regulating physiological processes and responding to internal and external stimuli.

Chlorophyll: A green pigment in plants, algae, and cyanobacteria essential for photosynthesis. It helps cleanse and build the blood; inhibits bacterial growth and anaerobic yeasts and fungi in the digestive tract, purifying the body of toxins; is anti-inflammatory; helps renew cells and support healthy gut microbiota; and helps regulate calcium absorption. It is available in green powder and can be added to a smoothie or water. Chlorophyll is helpful for people with gut permeability and colon problems, fatigue-related conditions like chronic fatigue syndrome, adrenal fatigue, depression and fibromyalgia, and inflammatory bowel syndrome.

Choline: An essential nutrient that plays a role in cell membrane structure, neurotransmitter synthesis, and lipid metabolism, crucial for maintaining overall health, particularly for brain development and function. It is a precursor to acetylcholine, a neurotransmitter important for brain function, memory, and muscle control. Choline is found in foods such as eggs, liver, and soybeans.

Chrononutrition:

The use of specific foods and supplements used at specific times to affect circadian rhythm, regulate metabolism, improve weight management, and enhance well-being.

Circadian rhythm: The approximately 24-hour internal cycle that aligns with Earth's light-dark cycle and regulates sleep-wake patterns, hormone release, and body temperature. Disruptions to the circadian rhythm, such as night shifts or jet lag, can negatively impact sleep quality, mood, and metabolic processes.

Colony-forming units (cfu): This traditional method of measuring probiotic strength is widely accepted in scientific studies and product labels. It counts only bacteria capable of forming colonies, which means it's a more conservative measure but may underestimate the total viable bacteria. Cfu is a better measure when you want to focus strictly on bacteria that can reproduce and establish themselves in the gut, aligning with older standards.

Cortisol: A steroid hormone produced by the adrenal glands that plays a key role in the body's response to stress. It helps regulate metabolism, immune response, and blood sugar levels, and is involved in the body's fight-or-flight response. Cortisol levels typically peak in the morning and decline throughout the day, but chronic stress or certain medical conditions can lead to imbalances that impact health.

Cyanocobalamin: A synthetic form of Vitamin B-12 used to treat or prevent Vitamin B-12 deficiency. Cyanocobalamin is converted into active forms of Vitamin B-12 in the body and is often prescribed to individuals with absorption issues or those on a vegan diet, where natural sources of B-12 are limited.

Cytokines: Small proteins released by cells that act as signaling molecules in the immune system, regulating and coordinating immune responses, influencing cell behavior by binding to specific receptors on their target cells, and affecting processes such as inflammation, cell growth, and immune response.

Dehydroepiandrosterone (DHEA): A steroid hormone produced primarily by the adrenal glands and the gonads. It is a precursor to sex hormones like estrogen and testosterone. DHEA levels typically peak in early adulthood and decline with age. It has been studied for its potential effects on aging, mood, and cognitive function.

Deprescribing:

The systematic collaborative process of reducing or withdrawing from medications, aimed at optimizing medication therapy, minimizing potential side effects, and improving overall patient health and quality of life. Deprescribing is particularly important for children and adolescents due to the risk to health and limited evidence for the use of drugs in children, and it is also essential in older adults due to the increased risk of adverse effects and drug interactions associated with polypharmacy.

Detoxification: The process of removing or neutralizing toxins from the body, which can be achieved through various biological, chemical, or lifestyle methods. Detoxification primarily occurs in the liver, where enzymes break down harmful substances into less toxic forms for excretion. Also called biotransformation, detoxification can also involve dietary and lifestyle changes, such as increased hydration, balanced nutrition, and avoiding substances that contribute to toxin buildup.

Dietary Approaches to Stop Hypertension (DASH) diet: A dietary plan designed to help prevent and manage high blood pressure (hypertension), emphasizing the consumption of fruits, vegetables, whole grains, lean proteins, and low-fat dairy, while reducing intake of saturated fats, cholesterol, and sodium. Foods rich in potassium, calcium, and magnesium are encouraged for their benefits for cardiovascular health. By focusing on nutrient-dense foods and limiting processed foods, the DASH diet aims to improve overall heart health and reduce the risk of chronic diseases.

Docosahexaenoic acid (DHA): An omega-3 fatty acid crucial for brain health, eye function, overall cell membrane integrity, and contributing to cognitive development and visual acuity. DHA is found in high concentrations in fatty fish like salmon and mackerel, and in supplements and fortified foods to support cardiovascular and neurological health.

Dopamine: A neurotransmitter that plays a key role in the brain's reward and pleasure systems, regulating movement and emotional responses, and in various functions such as motivation, reinforcement learning, and mood regulation. Imbalances in dopamine levels are linked to several neurological and psychiatric disorders, including Parkinson's disease, schizophrenia, and addiction.

Elimination diet: A dietary strategy used to identify and manage food sensitivities, allergies, or intolerances. Specific foods or food groups are eliminated from the diet for a period of time, then gradually reintroduced

one at a time while monitoring symptoms. This helps identify which foods may be causing adverse reactions and to tailor the diet to avoid those triggers, thereby improving overall health and well-being.

Endocannabinoid (eCB) system: A complex cell signaling system in the body that is involved in all aspects of mental and physical health, including mood, pain, appetite, addiction, immune response, the microbiome and gut permeability, the stress response, obesity and eating disorders, and the "bliss states." It consists of endocannabinoids (naturally occurring lipid-based neurotransmitters), cannabinoid receptors (such as CB-1 and CB-2), and enzymes that synthesize and degrade endocannabinoids. This system helps maintain homeostasis by modulating neurotransmitter release and maintaining balance in response to changes in the internal and external environment.

Endocannabinoid deficiency syndrome: Deficiency or dysfunction in the endocannabinoid system contributing to chronic pain, migraines, fibromyalgia, and certain mood disorders, proposed by Ethan Russo, MD.

Epigenetics: The study of changes in gene expression or cellular phenotype that do not involve alterations to the underlying DNA sequence. It refers to internal and external exposures which can activate or silence genes. These modifications can be influenced by environmental factors, lifestyle and nutrition, and developmental stages, and they play a crucial role in development, aging, and disease.

Epinephrine: A hormone and neurotransmitter (also known as adrenaline) produced by the adrenal glands in response to stress or danger. It plays a vital role in the body's fight-or-flight response by increasing heart rate, dilating airways, and mobilizing glucose from energy stores to prepare the body for immediate action. Epinephrine also affects blood flow to muscles and enhances mental alertness, helping individuals respond quickly to stressful situations.

Epstein-Barr virus (EBV): A member of the herpesvirus family and one of the most common human viruses, causing infectious mononucleosis ("mono" or "kissing disease"), characterized by symptoms like fever, sore throat, and swollen lymph nodes. EBV is also transmitted through saliva or other bodily fluids and is associated with some cancers and autoimmune diseases.

Essential fatty acids (EFAs): Polyunsaturated fats that the body cannot synthesize on its own that must be obtained through the diet, primarily

omega-3 and omega-6 fatty acids. Omega-3s, found in fatty fish, flaxseeds, and walnuts, are crucial for brain function, reducing inflammation, and supporting heart health. Omega-6s from vegetable oils and nuts are important for skin health and immune function.

Fast oxidizers (fast metabolizers): Individuals who have a faster metabolic rate and process nutrients more quickly than average. Fast oxidizers tend to burn through carbohydrates and fats at a rapid rate, leading to quicker energy release and higher appetite. Managing their diet typically involves balancing macronutrients to avoid potential issues such as rapid energy spikes or nutritional deficiencies.

Fasting glucose: The level of glucose (sugar) in the blood after an individual has not eaten or consumed any caloric beverages for at least 8 hours. This measurement assesses how well the body regulates blood sugar and is used in diagnosing and monitoring diabetes and prediabetes. Normal fasting glucose levels typically range between 70 and 99 mg/dL; levels above this range may indicate insulin resistance or diabetes.

Feingold diet: A dietary approach designed to reduce symptoms of hyperactivity and behavioral issues, particularly in children, by eliminating artificial additives, colors, and preservatives from the diet. Developed by Dr. Benjamin Feingold in the 1970s, the diet focuses on whole, natural foods and aims to address food sensitivities and allergic reactions that may contribute to behavioral problems.

Fermented foods: Foods that have been transformed by microorganisms such as bacteria, yeast, or fungi through a fermentation process. Fermentation not only preserves food but also increases the availability of vitamins, minerals, and beneficial probiotics, supporting gut health by promoting a balanced microbiome, improving digestion, and boosting immune function. Yogurt, sauerkraut, kimchi, kefir, and miso are all fermented foods.

Fibrinogen: A soluble plasma protein produced by the liver that plays a role in blood clotting. Elevated levels of fibrinogen can be a marker of inflammation and may be associated with an increased risk of cardiovascular diseases.

Fibrinolytic units (FU): A measure of how effective a substance is at dissolving fibrin, a protein involved in blood clotting. FU are used to quantify the activity of fibrinolytic agents, such as those used in treating

conditions like in certain types of stroke or heart attack in which blood clots need to be broken down.

Fibromyalgia: A chronic condition characterized by widespread musculoskeletal pain, fatigue, sleep disturbances, and often cognitive issues such as difficulty concentrating ("fibro fog"). The cause of fibromyalgia involves a combination of genetic, environmental, and neurobiological factors that affect pain processing and regulation. Management typically includes a combination of medication, physical therapy, lifestyle changes, and stress management techniques.

5-hydroxytryptophan (5-HTP): A naturally occurring amino acid and a chemical precursor to serotonin, a neurotransmitter that regulates mood, sleep, and appetite. It is used as a dietary supplement to help manage conditions related to low serotonin levels, such as depression, anxiety, and insomnia.

Folate (Vitamin B-9): A water-soluble B vitamin essential for DNA synthesis, repair, and cellular division. It plays a role in the formation of red blood cells and the prevention of certain birth defects and anemia. Folate is found in leafy greens, legumes, and citrus fruits or in synthetic form as folic acid added to fortified foods and supplements.

Folic acid: The synthetic form of folate, a water-soluble B vitamin (Vitamin B-9) used in dietary supplements and fortified foods. It is crucial for DNA synthesis, cell division, and the formation of red blood cells. Folic acid is particularly important for pregnant women, as it helps prevent neural tube defects in the developing fetus. Folic acid is often used to ensure adequate intake and support health, especially in populations at risk of deficiency.

Food allergy: An immune system response to a specific protein in a food that the body mistakenly identifies as harmful. When consumed the offending food triggers the immune system to release chemicals like histamine, leading to symptoms that can range from mild (hives or itching) to severe (difficulty breathing or anaphylaxis). Common food allergens include peanuts, tree nuts, milk, eggs, soy, wheat, fish, and shellfish. Managing food allergies involves avoiding the allergenic foods and being prepared with emergency medications, such as epinephrine, in case of accidental exposure.

Food-induced autoimmune disease: When the consumption of certain foods triggers or exacerbates an autoimmune response, leading the

immune system to mistakenly attack the body's own tissues. In these conditions, specific food proteins mimic or interact with body tissues, causing immune system activation and inflammation. Examples include celiac disease and autoimmune thyroiditis. Managing these conditions typically involves identifying and avoiding trigger foods while working with healthcare providers to manage symptoms and reduce inflammation.

Food sensitivity/intolerance: Adverse reaction to certain foods that do not involve the immune system, unlike food allergies. These reactions can cause symptoms such as digestive issues (bloating, gas, diarrhea), headaches, or fatigue. Common examples include lactose intolerance and gluten sensitivity, where individuals experience symptoms similar to celiac disease but without the autoimmune response. Management involves identifying and avoiding the offending foods to alleviate symptoms and improve quality of life.

Free radicals: Highly reactive molecules or atoms with unpaired electrons, which can cause oxidative damage to cells, proteins, and DNA. They are generated through normal metabolic processes, environmental factors such as pollution, radiation, and smoking, or during inflammatory responses. Oxidative stress from free radicals contributes to aging, chronic diseases, and various health conditions. Antioxidants, found in fruits, vegetables, and other foods, help neutralize free radicals and mitigate their potential harmful effects.

Functional hypoglycemia (see also Hypoglycemia): A condition where blood sugar levels drop below normal in response to excessive insulin production or rapid glucose metabolism, leading to symptoms like dizziness, irritability, and fatigue. It often occurs after meals high in refined carbohydrates and can be managed by eating balanced meals with complex carbohydrates and protein.

Gamma-aminobutyric acid (GABA): A neurotransmitter in the brain that functions as the primary inhibitory messenger, regulating neuronal excitability and promoting relaxation, control anxiety, muscle tone, and supporting overall brain function. Low levels of GABA have been associated with anxiety disorders and epilepsy, and GABA supplements are sometimes used to support relaxation and sleep.

Gastroesophageal reflux disease (GERD): A chronic digestive condition where stomach acid frequently flows back into the esophagus, causing irritation and inflammation. This backflow, or reflux, can cause heartburn,

regurgitation, chest pain, and difficulty swallowing. GERD can result from a weakened lower esophageal sphincter, lifestyle factors, or certain medical conditions, and is typically managed through dietary and lifestyle changes, medications, and, in severe cases, surgery.

Genetically modified organisms (GMOs): Plants, animals, or microorganisms that have been genetically engineered with DNA from bacteria, viruses, or other plants and animals. These modifications are aimed at improving resistance to pests, enhancing nutritional content, or increasing crop yields. The use of GMOs has been restricted or banned in over 60 countries because of their potential impacts on health, the environment, and for ethical reasons.

Glandulars: Dietary supplements made from animal glands or tissues, such as adrenal, thyroid, or pituitary glands, which support the function of corresponding human glands, improving hormone balance and overall glandular health.

Gliadorphin: A peptide derived from the partial digestion of gluten, a protein found in wheat, barley, and rye. It is similar in structure to certain opioid peptides and may play a role in the symptoms of conditions like autism and celiac disease.

Glucagon-like peptide-1 (GPL-1) agonists: A class of medications used in the treatment of type 2 diabetes and obesity, including liraglutide, exenatide, and semaglutide. These drugs mimic the action of the naturally occurring hormone GLP-1, which helps regulate blood sugar levels by enhancing insulin secretion, suppressing glucagon release, and slowing gastric emptying. GLP-1 agonists also promote weight loss and improve cardiovascular outcomes.

Glucoraphanin: A naturally occurring compound found in cruciferous vegetables, particularly in broccoli, that acts as a precursor to sulforaphane. When metabolized, glucoraphanin converts to sulforaphane, a potent antioxidant and anti-inflammatory agent. This compound plays a role in reducing oxidative stress, detoxification, and lowering the risk of certain cancers.

Glucose: A simple sugar and source of energy for the body’s cells. It is absorbed from digested carbohydrates and is transported to cells where it is used in cellular respiration to produce ATP (adenosine triphosphate), the source of energy for the cell. Hormones such as insulin and glucagon

regulate blood glucose to maintain energy balance and overall metabolic homeostasis. High or low blood glucose levels affect mental functioning.

Gluten: Gluten is composed of the proteins gliadin (a prolamin protein) and glutenin found in wheat, barley, and rye that can cause immune system reactions and gastrointestinal issues in individuals with celiac disease or gluten sensitivity.

Glycosaminoglycans: Also known as mucopolysaccharides, glycosaminoglycans are linear polysaccharides that are made up of repeating disaccharide units. They are found in every mammalian tissue and have many functions in the body, including cell signaling and development, angiogenesis, anticoagulation, tumor progression, axonal growth, and metastasis.

Gut and Psychology Syndrome (GAPS) diet: A dietary regimen undertaken in specific stages designed to improve gut health and address conditions such as autism spectrum disorders, ADHD, dyspraxia, dyslexia, and schizophrenia in particular, but it may be beneficial for everyone who is reactive to dairy and gluten. It focuses on (1) healing the gut, (2) restoring beneficial bacteria to the gut, and (3) detoxification. The diet emphasizes nutrient-dense, whole foods, homemade broths, and fermented foods while eliminating processed foods, sugars, and certain grains and starches to support gut healing and reduce inflammation.

Hair tissue mineral analysis (HTMA): A diagnostic test that measures the concentrations of minerals in tissue samples in hair. This analysis helps assess the body's mineral status, detect imbalances or toxic element exposures, and evaluate nutritional and metabolic health.

HbA1c: This blood test (also known as A1C) measures the average blood glucose (sugar) level over the past 2–3 months. It is a crucial indicator for assessing how well a person's blood sugar levels are controlled over time. Glucose in the blood binds to hemoglobin, forming glycated hemoglobin (HbA1c). The HbA1c test measures the percentage of hemoglobin that is glycated.

High-density, low-density lipoprotein (HDL, LDL): These two types of lipoproteins transport cholesterol in the blood. HDL ("good" cholesterol) helps remove excess cholesterol from the bloodstream and transports it to the liver for excretion. High levels of HDL are associated with a lower risk of cardiovascular disease. LDL ("bad" cholesterol) carries cholesterol from the liver to the cells. Elevated levels of LDL can lead to cholesterol

buildup in the arteries, increasing the risk of heart disease and stroke. Maintaining a healthy balance between HDL and LDL is crucial for cardiovascular health.

High-sensitivity C-reactive protein (hs-CRP): A blood test that measures low levels of C-reactive protein (CRP), a protein produced by the liver in response to inflammation. The hs-CRP test is used to assess chronic, low-grade inflammation and evaluate the risk of heart disease and stroke. Elevated hs-CRP levels may indicate increased inflammation in the body, associated with infections, autoimmune diseases, and chronic inflammatory disorders.

Hip-waist ratio: A measure of body fat distribution, calculated by dividing the circumference of the waist by the circumference of the hips. This ratio assesses abdominal fat relative to total body fat. A higher ratio indicates a greater concentration of abdominal fat, which is linked to a higher risk of metabolic and cardiovascular conditions.

Histamine: A neurotransmitter released from mast cells that is necessary for healthy immune function. However, high levels of histamine can cause allergic reactions and inflammation, causing symptoms like itching, swelling, and increased mucus production. In addition, excess histamine is associated with mood disorders. Histamine also plays a role in regulating stomach acid secretion and influencing sleep-wake cycles.

Homocysteine: An amino acid in the blood produced during the metabolism of methionine, an essential amino acid. Elevated levels of homocysteine are associated with an increased risk of cardiovascular diseases as it can promote arterial damage and blood clot formation. Vitamins B-6, B-12, and folate are crucial for maintaining normal homocysteine levels and reducing cardiovascular risk.

Hydrochloric acid (HCl): An acid produced in the stomach for digestion and absorption of nutrients. It breaks down proteins, activates digestive enzymes, and kills harmful microorganisms. Hydrochloric acid is crucial for effective digestion and preventing gastrointestinal infections, and imbalances can lead to conditions such as acid reflux or gastritis.

Hyperventilation: A condition characterized by overbreathing causing an excessive loss of carbon dioxide (CO_2) from the blood. This decrease in blood CO_2 levels leads to symptoms such as lightheadedness, tingling in the limbs, and shortness of breath. Hyperventilation can be triggered by anxiety, stress, or certain medical conditions.

Hypothalamic-adrenal-pituitary (HPA) axis: A complex endocrine system involving the hypothalamus, pituitary gland, and adrenal glands. It controls the release of cortisol and other hormones to regulate the body's stress response.

Inflammation: A biological response of the body's immune system to harmful stimuli, such as pathogens, damaged cells, or irritants. It involves a complex cascade of events aimed at removing the offending agent and initiating repair. Inflammation can be acute, providing a rapid and short-term response, or chronic, where it persists over a longer period and can contribute to various diseases such as arthritis, heart disease, and diabetes.

Intermittent fasting: A dietary approach of alternating periods of eating and fasting, such as time-restricted eating (e.g., eating within an 8-hour window and fasting for the remaining 16 hours) and alternate-day fasting. This approach is believed to support improved metabolic health, weight management, and potentially enhanced longevity.

Intestinal or "gut" permeability: The ability of the intestinal lining to control the passage of substances between the gut and the bloodstream. Increased permeability, or "leaky gut," occurs when the barrier is compromised and harmful molecules enter the bloodstream, triggering inflammation and leading to various health issues, including inflammatory bowel diseases, autoimmune disorders, and systemic inflammation.

Irritable bowel syndrome (IBS): A gastrointestinal disorder characterized by symptoms such as abdominal pain, bloating, and altered bowel habits, including diarrhea (IBS-D), constipation (IBS-C), or a mix of both (IBS-M). The exact cause of IBS is thought to involve gut-brain axis dysregulation, changes in gut microbiota, and increased intestinal sensitivity. Management typically includes dietary changes, stress management, and medication to alleviate symptoms.

Ketogenic diet: A high-fat, low-carbohydrate diet designed to shift the body's metabolism from relying on carbohydrates for energy to using fats, which results in the production of ketones in the liver. This metabolic state, known as ketosis, is achieved by reduced carbohydrate intake, increased fat consumption, and moderate protein intake. Originally developed for managing epilepsy, the ketogenic diet is now popular for weight loss, improving metabolic health, and potentially benefiting conditions like type 2 diabetes and neurodegenerative diseases.

Korn Food/Mood Diary: A tool to track and analyze the relationship between dietary intake and mood and energy fluctuations. By recording what you eat and drink, along with noting mood changes, stress levels, and other relevant factors, you can identify patterns or correlations between specific foods and emotional or psychological states.

Long COVID: Also known as post-acute sequelae of SARS-CoV-2 infection (PASC), long COVID comprises a range of symptoms that persist or emerge after the acute phase of a COVID-19 infection has resolved. Common symptoms include fatigue, brain fog, shortness of breath, and chest pain, but it can affect multiple systems and present with various manifestations. The condition can significantly impact daily functioning and quality of life, and its management often involves a multidisciplinary approach to address the diverse and prolonged symptoms experienced by patients.

Macrominerals: Essential minerals, such as calcium, phosphorus, magnesium, sodium, potassium, and chloride that are required by the body in large amounts to support various physiological functions, such as bone health, fluid balance, and nerve function.

Mediterranean diet: A diet inspired by the traditional eating habits of countries around the Mediterranean Sea, associated with improved cardiovascular health, better weight management, and reduced risk of chronic diseases such as diabetes and certain cancers. It emphasizes a high intake of fruits, vegetables, whole grains, legumes, nuts, and olive oil, moderate amounts of fish and poultry, and low intake of red meat and dairy. This diet focuses on healthy fats like olive oil, and fresh, minimally processed foods.

Medium-chain triglycerides (MCTs): A type of fat found in foods like dairy or manufactured from coconut oil and palm kernel oil. MCTs are metabolized more quickly than other types of fat, providing a rapid source of energy and a source of fat for those who are unable to tolerate other forms of fat. They are used in ketogenic diets and sports nutrition to enhance energy levels, weight management, and improve cognitive function.

Melatonin: A hormone produced by the pineal gland that regulates the sleep-wake cycle by signaling to the body when it is time to sleep. Melatonin increases in the evening in response to darkness, promoting sleepiness, and decreases with exposure to light. Melatonin supplements

are used for sleep disorders, jet lag, and shift work issues, and for regulating circadian rhythms and improving sleep quality.

Methylation pathway: A biochemical process where methyl groups ($–CH_3$) are transferred to molecules such as DNA, proteins, and lipids, influencing gene expression and cellular function. Key components include S-adenosyl-L-methionine (SAM) as the primary methyl donor and various methyltransferase enzymes that facilitate the transfer. It is relevant to mental health because essential nutrients like folate, Vitamin B-12, and Vitamin B-6 support this pathway by converting homocysteine to methionine. Proper functioning of the methylation pathway is crucial for maintaining DNA integrity, regulating gene expression, and overall metabolic health. People with the *MTHFR* SNPs have a greater likelihood of mild to moderate impairment of this pathway resulting in depression and detoxification challenges.

Methylcobalamin: A biologically active form of Vitamin B-12 that is essential for the proper functioning of the nervous system and is involved in the methylation pathway, which is important for DNA synthesis and repair. Methylcobalamin is often supplemented to address Vitamin B-12 deficiencies, particularly in individuals with impaired absorption or certain neurological conditions.

Monounsaturated fatty acids (MUFAs): A type of healthy fat characterized by having one double bond in their fatty acid chain. They are found in olive oil, avocados, nuts, and seeds. MUFAs are associated with improved heart health by lowering LDL cholesterol levels, reducing inflammation, and supporting overall metabolic health.

Motivational interviewing: A client-centered, collaborative counseling method designed to enhance an individual's motivation to change. It focuses on building a trusting relationship between the counselor and client, open-ended questions, reflective listening, and affirmations, helping clients articulate their own reasons for change and develop a plan to achieve their goals. Motivational interviewing is commonly used in addiction treatment, weight management, and chronic disease management.

Microbiome: The diverse community of microorganisms, including bacteria, viruses, fungi, and other microbes, that live in and on the human body, such as the gut, skin, and mouth. The gut microbiome plays a crucial role in digestion, immune function, and metabolism, protecting

against pathogens, and modulating inflammation. Imbalances of the microbiome, known as dysbiosis, have been linked to many health conditions, including gastrointestinal disorders, metabolic diseases, and mental health issues.

Microbiota: The collection of microorganisms, including bacteria, viruses, fungi, and protozoa, that reside in the human gut, skin, or mouth. These microorganisms play important roles in digestion, immune function, and overall health.

Mitochondria: Membrane-bound organelles found in most eukaryotic cells, often called the "powerhouses" of the cell due to their role in producing adenosine triphosphate (ATP), the cell's main energy currency. They are involved in energy metabolism, cellular respiration, and apoptosis (programmed cell death). Mitochondria are crucial for maintaining cellular health and function. Mitochondrial dysfunction is linked to metabolic disorders and neurodegenerative conditions.

Mixed oxidizer: One of three types of metabolizers within the concept of bio-individuality, or how different individuals metabolize and respond to various oxidizing agents differently due to unique biological and genetic factors. The balanced/mixed oxidizers will burn efficiently using 35% protein, 35% carbohydrates, and 30% fats.

Modified carnivore diet: A variation of the traditional carnivore diet, focusing on meat, fish, eggs, and animal fats while permitting small amounts of low-carb vegetables, fruits, or certain condiments. This approach offers the benefits of a carnivore diet while providing more flexibility and a broader range of nutrients.

Methylenetetrahydrofolate reductase (*MTHFR*): An enzyme involved in the process of converting folate (Vitamin B-9) into its active form, which is crucial for methylation, a process important for DNA synthesis and repair and for maintaining overall health. Genetic mutations in the *MTHFR* gene, such as the C677T and A1298C variants, can lead to reduced enzyme activity, potentially affecting folate metabolism and increasing the risk of cardiovascular diseases, pregnancy complications, and mental health conditions. Addressing *MTHFR* mutations often involves increased intake of methylated forms of folate (e.g., L-methylfolate) and Vitamin B-12, and managing lifestyle factors to support optimal methylation.

Multiple-chemical sensitivity (MCS):

Also known as multiple chemical sensitivity syndrome, MCS is a condition where individuals experience a range of symptoms in response to low levels of exposure to various chemicals and environmental toxins, such as perfumes, cleaning products, and pollutants. Symptoms can include headaches, fatigue, respiratory issues, and skin rashes.

Neurotoxins: Toxic substances that damage or disrupt the function of the nervous system, preventing nerves from functioning normally by interfering with their electrical activities. They are found in most packaged foods and include ingredients like dough conditioners, seasonings, yeast extract, carrageenan, maltodextrin, hydrolyzed vegetable protein, sodium fluoride, sodium caseinate, calcium caseinate, chicken, pork, or beef flavoring, disodium anything, smoke flavoring and anything called autolyzed, whey protein concentrate, natural flavors or spices, and additives such as glutamate and aspartate. They may also come from environmental pollutants, certain medications, heavy metals, and natural toxins from plants or animals. Exposure to neurotoxins can lead to a range of neurological issues, including cognitive deficits, Alzheimer's and Parkinson's diseases, motor dysfunction, and sensory impairments, and in severe cases, can cause neurodegenerative diseases or permanent neurological damage.

Neurotransmitter: Chemical messengers that transmit signals across synapses from one neuron to another, playing a role in communication within the nervous system, influencing mood, cognition, and muscle movement. Examples of neurotransmitters include serotonin, dopamine, norepinephrine, and GABA, each of which is involved in different aspects of neural function and health.

Nightshades: A group of plants belonging to the Solanaceae family, which includes tomatoes, potatoes, eggplants, and bell peppers. These plants contain compounds called alkaloids, such as solanine and capsaicin, which can be toxic in high amounts but are generally safe in typical dietary quantities. Some individuals, particularly those with autoimmune conditions or inflammatory issues, may experience adverse reactions to nightshades, leading to symptoms like joint pain, digestive problems, skin inflammation, with symptoms improving by avoiding or restricting these foods in the diet.

Nijmegen Scale: A diagnostic tool developed in the Netherlands that assesses the severity of symptoms related to hyperventilation syndrome

and other related conditions. It consists of a series of questions designed to evaluate the frequency and intensity of symptoms such as dizziness, shortness of breath, and palpitations, commonly associated with hyperventilation and anxiety disorders. The results help clinicians identify patients who may benefit from further evaluation and treatment for hyperventilation syndrome and related disorders.

Nonceliac gluten sensitivity (NCGS): A condition characterized by gastrointestinal symptoms that occur after the consumption of gluten, in the absence of celiac disease or wheat allergy. Symptoms can include abdominal pain, bloating, diarrhea, headaches, fatigue, and joint pain. Unlike celiac disease, NCGS does not cause the same autoimmune damage to the small intestine, and the diagnosis is typically made through the exclusion of other conditions and observing symptom improvement on a gluten-free diet.

Norepinephrine: A neurotransmitter and hormone (also known as noradrenaline) that plays a key role in the body's response to stress. As a neurotransmitter, it helps transmit signals in the brain related to attention, focus, and alertness, and it is involved in the fight-or-flight response by increasing heart rate, blood pressure, and blood flow to muscles. As a hormone, norepinephrine is released by the adrenal glands into the bloodstream, influencing physiological responses and mood regulation. Its dysregulation is associated with conditions such as depression, anxiety, and cardiovascular disorders.

Oligoantigenic diet: A restrictive diet designed to identify and eliminate specific food antigens that may be causing allergic or intolerant reactions.

Omega-3 (linolenic acid): An essential fatty acid known as alpha-linolenic acid (ALA) that plays a role in reducing inflammation and supporting heart health. ALA can be converted into other forms of omega-3 fatty acids, such as EPA and DHA. Including ALA-rich foods in the diet, such as flaxseeds, chia seeds, and walnuts, contributes to overall cardiovascular health and helps maintain balanced lipid levels.

Omega-6 (linoleic acid): An essential fatty acid that helps maintain cell membrane structure and function. It serves as a precursor to other important bioactive compounds, including arachidonic acid, which is involved in inflammation and immune responses. Omega-6 is found in vegetable oils, nuts, and seeds. Excessive intake of omega-6 relative to omega-3 fatty acids can promote inflammation and contribute to chronic

diseases, so balancing these two EFAs is important for maintaining optimal health and reducing inflammation.

Orthorexia nervosa: An eating disorder characterized by a fixation on eating only foods that are considered healthy or pure, often to the exclusion of a balanced diet. It may include self-abnegation and take the form of increased dietary restrictions, fasting, and exercise. Health may suffer if orthorexia becomes severe and as foods become so restricted that calories and the variety of nutrients are reduced. Strict dietary rules and restrictions, or avoiding foods deemed unhealthy or contaminated, can lead to nutritional deficiencies and social isolation. This condition requires a multidisciplinary approach for treatment, including psychological counseling and nutritional guidance.

Oxidation, oxidative stress: A chemical reaction where a substance loses electrons, resulting in the formation of oxidized products. Oxidative stress occurs when there is an imbalance between the production of reactive oxygen species or free radicals and the body's ability to neutralize or repair the damage they cause. This imbalance can lead to cellular and tissue damage, contributing to inflammation, aging, cardiovascular disease, cancer, and neurodegenerative disorders. Antioxidants help mitigate oxidative stress by neutralizing reactive oxygen species and protecting cells from damage.

Oxytocin: A hormone and neurotransmitter produced by the hypothalamus and released by the posterior pituitary gland, which plays an important role in childbirth, lactation, and social bonding. Oxytocin is also known as the "love hormone" or "bonding hormone" for its involvement in fostering emotional connections, trust, and social interactions, as well as reducing stress and promoting emotional well-being.

Paleolithic (paleo) diet: Also known as the "paleo" or "caveman" diet, this diet emphasizes whole, unprocessed foods that would have been available to humans during the Paleolithic era, including lean meats, fish, fruits, vegetables, nuts, and seeds, while excluding processed foods, grains, legumes, dairy products, and refined sugars.

Parasympathetic nervous system: One of the two main divisions of the autonomic nervous system, responsible for promoting a state of relaxation and rest. It counterbalances the sympathetic nervous system's fight-or-flight response by slowing the heart rate, increasing digestive activity,

facilitating energy conservation and recovery, and helping maintain homeostasis.

Peptides: Short chains of amino acids linked by peptide bonds, typically consisting of fewer than 50 amino acids. They function as signaling molecules and hormones, such as insulin and glucagon, and play essential roles in metabolism, immune responses, and cell communication. Peptides can also act as neurotransmitters or modulators, influencing brain function and mood.

Phospholipids: A class of lipids that are components of cell membranes, composed of two fatty acid tails and a phosphate group attached to a glycerol backbone. Phospholipids create a semipermeable barrier that regulates the movement of substances in and out of cells. They also play roles in signaling, lipid metabolism, and the formation of lipid droplets and lipoproteins.

Polyunsaturated fatty acids (PUFAs): A type of fat containing multiple double bonds in their carbon chain, making them essential for brain health, cell membrane structure and function, reducing inflammation, and cardiovascular health. PUFAs include omega-3 fatty acids (alpha-linolenic acid, EPA, and DHA) and omega-6 fatty acids (linoleic acid), and are found in high amounts in fatty fish, flaxseeds, walnuts, and vegetable oils.

Postbiotics: Bioactive compounds produced by probiotics during fermentation processes in the gut. While probiotics are live microorganisms, postbiotics are nonliving by-products such as metabolites, cell wall components, or other substances released by bacteria that can positively influence health. These compounds modulate immune responses, improve gut health, and maintain a balanced microbiome.

Prebiotics: Nondigestible food components, typically fibers or oligosaccharides, that serve as a food source for probiotics, improving gut health by promoting a balanced microbial environment, enhancing digestion, and supporting immune function. Sources of prebiotics include garlic, onions, bananas, and whole grains.

Pregnenolone: A steroid hormone synthesized from cholesterol and a precursor to progesterone, estrogens, testosterone, and cortisol. It plays a role in hormone production, mood regulation, and cognitive function. Pregnenolone levels decline with age, and supplementation can address

symptoms related to hormonal imbalances, such as fatigue or cognitive decline.

Probiotics, Psychobiotics: Live microorganisms, often referred to as "good" or "beneficial" bacteria, that help in digesting food, enhancing immune function, and protecting against harmful bacteria, thereby improving the gut microbiome balance. Probiotics include fermented foods like yogurt, kefir, and sauerkraut, as well as dietary supplements. Psychobiotics are a subset of probiotics that influence mental health and brain function, exerting their effects through the gut-brain axis. Psychobiotics may help alleviate symptoms of depression, anxiety, and other mental health conditions by modulating the gut microbiome and affecting neurotransmitter levels.

Proteolytic enzymes: A group of enzymes that help break down proteins into smaller peptides and amino acids by cleaving peptide bonds. They are essential for digestion, immune response, and tissue repair. They may be obtained through the diet in foods like pineapple (bromelain) and papaya (papain), or produced within the body. Proteolytic enzymes help digest proteins and regulate inflammation.

Psychodynamic therapy: A form of talk therapy focusing on how unconscious thoughts and early life experiences influence current behavior and emotions. It examines past experiences, childhood relationships, and patterns of behavior to foster self-understanding and emotional change. By increasing awareness of unconscious processes, psychodynamic therapy can help individuals gain insight into their problems, resolve internal conflicts, and achieve personal growth and emotional relief.

Psychoeducation: Providing individuals with information and understanding about psychological conditions, mental health issues, and effective coping strategies. By increasing awareness about mental health, psychoeducation helps people understand their conditions, recognize symptoms, and learn practical skills to manage and improve their well-being.

Psychotropic medications: Drugs used to treat mental health disorders by influencing brain chemistry to affect mood, cognition, and behavior. They include antidepressants, antipsychotics, mood stabilizers, and anxiolytics.

Pulse test: A method used to assess reactions to foods or environmental factors by measuring changes in pulse rate. It is employed to identify food

sensitivities or intolerances by monitoring pulse variations after consumption.

Raw diet: A diet emphasizing unprocessed and uncooked foods, including fruits, vegetables, nuts, seeds, and in some cases raw animal products like meat and dairy. Proponents believe that eating raw foods preserves nutrients and enzymes that can be lost during cooking.

Refined carbohydrates: Processed carbohydrates that have been stripped of their natural fiber, vitamins, and minerals. These include products like white bread, sugary snacks, and pastries, which when eaten are rapidly absorbed into the bloodstream, leading to quick spikes in blood sugar levels, which can contribute to insulin resistance, weight gain, and an increased risk of type 2 diabetes and heart disease. Unlike whole carbohydrates found in fruits, vegetables, and whole grains, refined carbohydrates offer little nutritional benefit and can negatively impact overall health.

S-adenosyl-L-methionine (SAM): A naturally occurring compound in the body that plays a crucial role in methylation processes, which are vital for the synthesis of neurotransmitters, cell membrane maintenance, and detoxification. SAM is involved in the production of serotonin, dopamine, and norepinephrine, impacting mood regulation and cognitive function. As a dietary supplement SAM supports mental health, improves mood, and alleviates symptoms of depression.

Salicylates: A group of organic compounds found naturally in various fruits, vegetables, herbs, and spices, and used in medications, such as aspirin, for their anti-inflammatory and pain-relieving properties. High levels of salicylates can cause adverse reactions in sensitive individuals, including digestive issues, headaches, or allergic responses.

Saturated fatty acids: A type of fat characterized by having no double bonds between the carbon atoms in their hydrocarbon chain, resulting in a structure where each carbon atom is fully “saturated” with hydrogen atoms. They are typically solid at room temperature and are found in meat, butter, and cheese, as well as coconut and palm oil. While saturated fats are essential for various bodily functions, excessive consumption has been linked to increased levels of LDL cholesterol and a higher risk of cardiovascular diseases.

Second brain: The enteric nervous system, a complex network of neurons embedded in the lining of the gastrointestinal tract. Independent of the

CNS, the second brain is responsible for regulating digestive processes, including peristalsis, secretion of digestive enzymes, and interaction with gut microbiota. The enteric nervous system is called the “second brain” because of its sophisticated network and ability to function autonomously, and it is also linked to the CNS, influencing mood and emotions through the gut-brain axis.

Selective serotonin reuptake inhibitors (SSRIs): A class of antidepressant medications that increase serotonin levels in the brain by inhibiting its reuptake into nerve cells, thus improving mood, reducing anxiety, and alleviating symptoms of depression. SSRIs are commonly prescribed for depression, anxiety disorders, and obsessive-compulsive disorder, PMS/PMDD and just about everything! SSRIs like antipsychotics depress mitochondria respiration.

Serotonergic drugs: Medications that primarily influence the serotonin system in the brain, either by increasing serotonin levels or enhancing its effects on neurotransmission. These drugs include selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), and certain antipsychotics, and are used to treat depression, anxiety disorders, and other mood-related conditions.

Serotonin: A neurotransmitter involved in regulating mood, anxiety, and overall emotional well-being. It is found in the brain, gastrointestinal tract, and blood platelets, where it influences sleep, appetite, and digestion. Imbalances in serotonin levels are associated with depression and anxiety.

Short-chain fatty acids (SCFA): Fatty acids with fewer than six carbon atoms, produced through the fermentation of dietary fibers by gut bacteria in the colon. Key SCFAs, including acetate, propionate, and butyrate, help maintain gut health by providing energy to colon cells, regulating inflammation, and supporting the integrity of the gut barrier. They also modulate immune responses, improve metabolic health, and affect brain function through the gut-brain axis.

Single nucleotide polymorphism (SNP): A variation at a single nucleotide position in the DNA sequence that is common in the population. By definition, an SNP must occur in at least 1% of the population. It is often confused with a genomic mutation, which it is not.

Slow oxidizers: Individuals who metabolize carbohydrates, fats, and proteins more slowly compared to fast oxidizers, leading to a slower rate

of energy production from these nutrients. Slow oxidizers tend to have lower energy levels, a slower metabolism, and a greater propensity to store fat. They may benefit from balanced, consistent nutrient intake to optimize energy levels and metabolic function, such as consuming complex carbohydrates and moderate protein. The optimal dietary ratio is 30% protein, 50% carbohydrates, and 20% fats.

Small intestinal bacterial overgrowth (SIBO): A condition of excessive bacteria proliferation in the small intestine, disrupting normal digestion and nutrient absorption. This overgrowth can cause bloating, abdominal pain, diarrhea, and malabsorption of nutrients. SIBO is often diagnosed through breath tests that measure hydrogen and methane levels, and treatment typically involves a combination of antibiotics or antimicrobial herbs, dietary changes, and strategies to restore healthy gut flora.

Standard American diet (SAD diet): A dietary pattern prevalent in the United States of eating high amounts of processed foods, sugars, refined grains, and unhealthy fats, while being low in fruits, vegetables, and whole grains. Fast food, sugary beverages, and high-fat dairy products are typical examples of foods associated with the SAD diet. The SAD diet is linked to obesity, type 2 diabetes, cardiovascular diseases, and metabolic syndrome due to its imbalance of nutrients and high caloric content.

Statin drugs: A class of medications used to lower cholesterol levels in the blood by inhibiting the enzyme HMG-CoA reductase, which plays a key role in the production of cholesterol in the liver. They help reduce the risk of heart attacks and strokes by decreasing low-density lipoprotein (LDL) cholesterol and improving overall lipid profiles. Statins are generally well tolerated, but potential side effects can include muscle pain, liver enzyme abnormalities, digestive issues, and nutrient deficits.

Sulfites: Sulfur-based compounds used as preservatives in food and beverages to prevent spoilage and maintain freshness. They are found in dried fruits, wines, and some processed foods. Individuals with sulfite sensitivities or allergies may experience adverse reactions.

Sympathetic nervous system: A division of the autonomic nervous system responsible for the body’s fight-or-flight response to stress or danger. It increases heart rate, elevates blood pressure, and heightens alertness to prepare the body for rapid action. The sympathetic nervous system works in concert with the parasympathetic nervous system, which

helps the body return to a state of rest and recovery after the stressor has passed.

Tapering: The gradual reduction of a medication to minimize withdrawal symptoms or avoid potential adverse effects or withdrawal symptoms.

Telomere: Repetitive DNA sequences located at the ends of chromosomes that protect them from degradation and prevent them from sticking together. They are involved in cellular aging and stability by safeguarding the genetic information during cell division. Each time a cell divides, telomeres shorten, leading to cellular aging and limiting the number of times a cell can divide.

Total cholesterol: A measure of the combined levels of cholesterol in the blood, including low-density lipoprotein (LDL), high-density lipoprotein (HDL), and very low-density lipoprotein (VLDL). High total cholesterol levels can increase the risk of heart disease and stroke. Regular monitoring helps assess overall lipid levels and guide dietary and lifestyle changes to manage heart health.

Trace minerals: Essential nutrients required by the body in very small amounts to maintain health and support enzyme function, immune response, and hormone production. These minerals include iron, zinc, copper, selenium, manganese, iodine, and molybdenum, among others. Deficiencies or imbalances in trace minerals can lead to various health issues, emphasizing the importance of a balanced diet and/or supplementation to ensure adequate intake.

Trans fatty acids (trans fats): A type of unsaturated fat that has been chemically altered through chemical hydrogenation to become more solid at room temperature. They are found in partially hydrogenated oils used in processed foods to improve texture and extend shelf life. Trans fats are associated with an increased risk of cardiovascular diseases, as they can raise LDL (bad) cholesterol levels and lower HDL (good) cholesterol levels in the blood. As a result they should be minimized or avoided in the diet.

Triglycerides: A type of fat found in the blood that the body uses for energy. They are formed from the excess calories we consume and are stored in fat cells. High levels of triglycerides can increase the risk of heart disease and stroke, especially when combined with high cholesterol or obesity. Maintaining a healthy lifestyle, including a balanced diet and regular exercise, can help manage and lower triglyceride levels.

Vagus nerve: A nerve in the parasympathetic nervous system that helps regulate heart rate, digestive processes, and respiratory rate. It extends from the brainstem through the neck and chest down to the abdomen. The vagus nerve helps promote relaxation, reduce stress, and maintain overall homeostasis by counteracting the fight-or-flight responses of the sympathetic nervous system.

Vegan diet: A diet that excludes all animal products, including meat, dairy, eggs, and often honey. It emphasizes plant-based foods such as fruits, vegetables, grains, nuts, seeds, and legumes. People who choose a vegan diet may do so for health, ethical, or environmental reasons. While a vegan diet can offer health benefits such as lower risks of heart disease and high blood pressure, it is prone to nutrient deficiencies, such as protein, Vitamin B-12, iron, calcium, and omega-3 fatty acids.

Vegetarian diet: A diet that excludes meat and fish but includes plant-based foods and may include dairy products and/or eggs (lacto-ovo-vegetarians, lacto-vegetarians, ovo-vegetarians). A well-balanced vegetarian diet can provide certain health benefits, but it’s important to ensure adequate intake of nutrients like protein, iron, calcium, Vitamin B-12, and omega-3 fatty acids.

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- Carlson Labs
- Fungi Perfecti
- Green Pastures
- Integrative Therapeutics
- Life Extension
- Seed Synbiotics
- Standard Process
- Thorne

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- Nidra Sleep Mask
- Sommerfly Weighted Blankets

Specific Supplements

- Berkeley Life
- Sonic Cholesterol
- Association of Placenta Preparation Arts (APPA)

Foods and Food-Related Technologies

- Bragg’s Apple Cider Vinegar

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- Find Real Food App
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Cooking Skills
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- Cookbooks and Cooking Blog
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Nutritional Therapies Training
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- Health Coach Training Program
- National Association of Nutrition Professionals (NANP)
- Nutritional Therapy Practitioner Program (NTP)

Organizations
- American Nutrition Association
- Integrative Mental Health Network
- WestonPrice Foundation

Databases, Calendars, and Guidelines

Antidepressant Tapering Calculator

This calculator creates personalized tapering schedules: https://drugtaper.com/

Deprescribing Guidelines and Algorithms

Evidence-based deprescribing guidelines have been developed by or in collaboration with the deprescribing.org team for five classes of medications. Each guideline is accompanied by a decision-support algorithm, patient pamphlet, infographic and for some, a whiteboard video on how to use the algorithm: https://deprescribing.org/resources/deprescribing-guidelines-algorithms/

Drug–Nutrient Interactions

Virtual Database

Use this database to enter a drug or supplement; receive a full interaction report that includes notice of potential interactions:

MedStopper

This educational tool is intended for use by health professionals to help make decisions around stopping or tapering medications. Clients/patients are encouraged to print out the information it contains for discussion with their healthcare provider: https://medstopper.com/

Nutrition Data

This website provides detailed nutrition information, plus unique analysis tools that tell you more about how foods affect your health and make it easier to choose healthy foods: https://www.self.com/food/nutrition

RxISK

This free, independent website allows patients, doctors, and pharmacists to research prescription drugs and easily report a drug side effect: https://www.rxisk.org

Tapering Strip

Tapering strips allow patients to regulate the tempo of their dose reduction over time and enable them to taper more gradually, conveniently, and safely than is possible using currently available standard medication, thereby preventing withdrawal symptoms. In a tapering strip, medication is packaged in a roll or strip of small daily pouches. Each pouch is numbered and has the same or slightly lower dose than the package before it: https://www.taperingstrip.us/

TaperMate

This mobile app helps people safely stop medications that cause withdrawal symptoms like antidepressants and benzodiazepines. TaperMate puts the user in control of their own taper by providing evidence-based information and content to help them to develop and track a safe medication tapering plan: https://tapermate.com.au/

Assessments, Testing, and Lab Tests

Apollo Health (BrainScan)

For people aged 30 and above, the p-Tau 217, GFAP, and NfL blood tests offer early detection of cognitive decline and help guide prevention and treatment strategies: https://www.apollohealthco.com/brainscan/

Berkeley Life

Berkeley Life's nitric oxide saliva test strips indicate salivary nitrite levels, which are a proven precursor to nitric oxide levels in the body: https://berkeleylife.com/products/nitric-oxide-test-strips/

Center for Environmental Therapeutics

This independent, nonprofit professional organization dedicated to education and research on new environmental therapies offers self-assessment questionnaires and environmental therapy products: https://cet.org/

Diagnos-Techs

This company provides saliva testing for evaluating stress, hormone-related disease, food allergies, gastrointestinal health, 24-hour cortisol test to evaluate HPA axis function, and other health conditions: https://www.diagnostechs.com/

Diagnostics Solutions Laboratory

The GI-MAP® (Microbial Assay Plus) is a comprehensive stool test that relies on quantitative polymerase chain reaction (qPCR) technology to detect parasites, bacteria, *H. pylori*, fungi, and more by targeting the specific DNA of the organisms tested: https://www.diagnosticsolutionslab.com/tests/gi-map

Dutch Test

"Dutch" stands for dried urine test for comprehensive hormones: https://dutchtest.com/

Eating Attitudes Test 26

This test can be used for education and screening; a score of 20 or greater implies the need for further assessment: https://www.eat-26.com/

Environmental Relative Moldiness Index (ERMI)

The ERMI test kit uses dust samples to profile mold contamination in your home, giving you a clear picture with an easy-to-understand index value: https://moldtesting.com/mold-test-kits/

Genomind

Their pharmacogenetic (PGx) testing turns genetic data into actionable treatment insights that can help you narrow down medication choices and personalize dosing: https://genomind.com/solutions/pharmacogenetic-testing/

Genova Diagnostics: NutrEval

A blood and urine profile that evaluates over 125 biomarkers and assesses the body's functional need for 40 antioxidants, vitamins, minerals, essential fatty acids, amino acids, and digestive support: https://www.gdx.net/products/nutreval

Cyrex Gluten and Food Allergy/Food Sensitivity Testing

Cyrex™ (https://www.cyrexlabs.com/) specializes in testing for autoimmune conditions: https://www.cyrexlabs.com/CyrexTestsArrays/tabid/136/Default.aspx

HumanN Professional

Nitric oxide indicator strips capture a simple, noninvasive saliva sample to determine the concentration of a salivary nitrite, a key biomarker needed for the production and availability of nitric oxide: https://pro.humann.com/products/n-o-indicator-strips-pro

Kashi Clinical Laboratories

Their pharmacogenetics testing for providers helps them minimize trial-and-error approaches in prescribing medications to treat pain, depression, anxiety, and other mental health issues: https://kashilab.com/genetic-testing/drug-metabolism/

Life Extension

They provide requisitions for client-ordered blood tests for a variety of markers, including inflammatory markers, homocysteine, high-sensitivity C-reactive protein (hs-CRP), fibrinogen, and micronutrient tests (blood):

Life Length Laboratories

Telomere and telomerase diagnostics: https://lifelength.com/en/

MitoSwab

MitoSwab™, a noninvasive test designed to assess mitochondrial function by analyzing cells collected via a cheek swab, measures the activity of key enzymes involved in mitochondrial energy production: https://www.religendx.com/neurology/mitoswab-test/

Meridian Valley Lab

They provide 24-hour urine hormone collection, dried urine hormone collection, and food-safe collection instructions: https://www.meridianvalleylab.com/

Mosaic Diagnostics

Mosaic Diagnostics (https://mosaicdx.com/) provides specialized testing, including the organic acids test (OAT), gluten/casein, Vitamin D, amino acid levels testing (urinary and blood), urinary/serum peptide tests, and zinc taste test. Organic acids are products of the body's metabolic pathways; the OAT measures 76 organic acids from one easy-to-collect urine sample: https://mosaicdx.com/tests/.

Nijmegen Questionnaire

The Nijmegen scale is a 16-item measure useful for identifying anxiety and hyperventilation associated with somatic symptoms: https://www.physio-pedia.com/Nijmegen_Questionnaire

OptimalDX (ODX)

ODX offers functional blood chemistry analysis and training and tools for professionals: https://www.optimaldx.com/

PANS/PANDAS Diagnostic Assessment Guides

The Neuroimmune Foundation, a 501(c)(3) nonprofit organization dedicated to improving outcomes for individuals with PANS/(PANDAS) and autoimmune encephalitis, provides assessment resources: https://neuroimmune.org/clinicians/pans-diagnosis-and-treatment-guides/

Healthy Kids Happy Kids is an online resource directed by Dr. Elisa Song, a holistic pediatrician specializing in PANS/PANDAS: https://healthykidshappykids.com/

Quicksilver Scientific

The blood metals panel screens a total of 16 elements to show elevated exposure or imbalances in whole blood, including the nutrient elements calcium, copper, lithium, magnesium, manganese, molybdenum, selenium, and zinc; the toxic metals antimony, arsenic, cadmium, lead, mercury; and the potentially toxic metals cobalt, silver, and strontium; a mercury tritest is also available: https://www.quicksilverscientific.com/

Rupa Health

Rupa Health distributes various tests that a licensed clinician can order: https://labs.rupahealth.com/discover-labs/search. Where states or specific labs prohibit ordering without a physician's license, Rupa provides in-house physician ordering options.

Seasonal Pattern Assessment Questionnaire (SPAQ)

The SPAQ is a brief, self-administered screening tool for seasonal depressive disorder (SAD): https://www.normanrosenthal.com/seasonal-pattern-assessment-questionnaire/

SpectraCell Laboratories

Their advanced laboratory tests include micronutrient, cardiovascular, telomere, *MTFHR*, and wellness panels: https://www.customer.spectracell.com/

3X4 Genetics

The 3X4 blueprint provides comprehensive genetic testing with actionable steps for lifestyle, derived from salivary DNA: https://3x4genetics.com/

Trace Elements

They provide hair-tissue mineral analysis for metabolic type, mineral ratios, and heavy metals:

High-Quality Nutrient Brands

Fullscript

This online platform sells nutritional and lifestyle products to licensed practitioners and provides templates for developing protocols: https://fullscript.com/

Allergy Research Group

Excellent source of vitamins, minerals, and glandulars: http://www.allergyresearchgroup.com/

Biotics Research Corporation

Excellent source of vitamins, minerals, and glandulars, as well as De-Stress and Liquid Zinc: https://www.bioticsresearch.com/

Carlson Labs

Excellent source for Vitamin E and fish oil: http://www.carlsonlabs.com/

Fungi Perfecti

Provides medicinal mushroom supplements and products: https://fungi.com/

Green Pastures

High-quality fermented cod liver oil and butter-oil blend: https://www.greenpasture.org/

Integrative Therapeutics

Provides high-quality supplements: http://www.integrativepro.com/

Life Extension

Provides nutritional information, products, and services: http://www.lef.org/

Seed Synbiotics

A microbial sciences company pioneering applications of microbes to improve human and planetary health: https://seed.com/

Standard Process

Whole-food-based nutritional supplements: https://www.standardprocess.com

Thorne

Quality nutritional supplements: https://www.thorne.com/products

Sleep Resources

MZOO Sleep Masks

Innovative sleep masks for both back and side sleepers, ensuring zero eye pressure and 100% light blocking, perfect for travel, meditation, or napping:

https://themzoo.com/

Nidra Sleep Mask

Using advanced ergonomics, the Nidra Deep Rest Sleep Mask uniquely contours to your face to block out 100% of the light: https://nidragoods.com/

Sommerfly Weighted Blankets

Premier products that help people sleep, focus, and calm, with unique sensory and design features for all ages, including hospital-grade and classic style weighted blankets, lap pads and shoulder wraps, compression tubes, fidgets, and more: https://www.sommerfly.com/

Specific Supplements

Berkeley Life

Nitric oxide supplements and products: https://berkeleylife.com/products/

Sonic Cholesterol

A purified cholesterol supplement to support healthy cholesterol levels by New Beginnings Nutritionals: https://www.nbnus.net/products/344-sonic-cholesterol-120-caps/

Association of Placenta Preparation Arts (APPA)

A resource for professionals looking for superior training or certification in the placenta arts (as well as parents and others seeking to learn more about placenta encapsulation): https://placentaassociation.com/

Foods and Food-Related Technologies

Bragg's Apple Cider Vinegar

Organic raw apple cider vinegar: http://www.bragg.com/

Diaspora Co.

Fresh, heirloom, and single-origin spices sourced directly from their partner farms in South Asia: https://www.diasporaco.com/

Find Real Food App

This app lists over 13,000 researched foods and brands highest in nutrient density, without additives and processing: https://www.findrealfoodapp.com/

Gluten Free Scanner

This app allows you to use your phone to scan the barcodes on the products you buy, helping you identify gluten-free foods: https://scanglutenfree.com/

Cooking Skills

Cooking Matters

Helps families to shop for and cook healthy meals on a budget: http://cookingmatters.org/

Food Scores App

Produced by the Environmental Working Group, a non-profit organization that conducts research and advocacy to protect human health and the environment, this app rates the quality of the food/brand name and produces an overall score between 1 and 10: http://www.ewg.org/foodscores?inlist=Y&sdf=1

Stella Culinary Knife Skills Videos

This high-definition video series teaches the basics of how to work with knives and also has tutorials on how to sharpen your knife, and butchery: http://www.stellaculinary.com/knife-skill-video-techniques-hd

Rouxbe Online Cooking School

Rouxbe (ROO-bee) is a members-only online cooking school delivering culinary and wellness instruction to home cooks, schools, restaurants, and professional culinary academies: http://rouxbe.com/

Cookbooks and Cooking Blog

These two resources are among the best food cookbooks and blogs. Watch out for use of some ingredients like sugar that you will want to avoid—just make a substitution.

Canal House cookbooks: https://www.thecanalhousebooks.com/
Food52 blog: http://food52.com/

Kitchen Appliances

Blenders

Brands to look for include Vitamix, K-Tec Blender, Juiceman Smoothies, and Tribest Blender.

Juicer

Champion Juicer is a very high-quality juicer: http://championjuicer.com/

Dehydrator

The Excalibur is a good choice, as it has temperature control, is fan operated, and is easy to clean: http://www.excaliburdehydrator.com/

Nutritional Therapies Training

Bastyr University Nutrition Programs

Bastyr University offers undergraduate and graduate nutrition degree programs, as well as nondegree programs that encompass a “whole food” approach: https://www.bastyr.edu/academics/nutrition

Health Coach Training Program

The Institute for Integrative Nutrition’s Health Coach Training Program is online, with lectures by leading health experts: http://www.integrativenutrition.com/

National Association of Nutrition Professionals (NANP)

This association keeps a list of training programs that have been reviewed and approved as meeting NANP’s educational standards and qualify their graduates for professional membership and to sit for the holistic nutrition national board exam: https://nanp.org/approved-schools-list/

Nutritional Therapy Practitioner Program (NTP)

This distance-learning program provides students with 9 months of distance training with the flexibility of self-paced study, teleconference calls, and three separate multiple-day, instructor-led workshops during the 15-module course: http://nutritionaltherapy.com/

Organizations

American Nutrition Association

A membership organization that advances personalized nutrition through education and advocacy: https://www.theana.org/

Integrative Mental Health Network

Hosts an annual conference of multidisciplinary leaders in our field: https://www.immh.org/

WestonPrice Foundation

Provides education, research, and activism for restoring nutrient-dense foods to the human diet: http://www.westonaprice.org/

Books and Other Print Resources

The Brainbow Blueprint: A Clinical Guide to Integrative Medicine and Nutrition for Mental Well-Being, by Leslie Korn (PESI Publishing, 2023).

Cleanse Your Body, Reveal Your Soul: Sustainable Well-Being Through the Ancient Power of Ayurveda Panchakarma Therapy, by Judith Pentz (TMA Press, 2020).

Finally Focused: The Breakthrough Natural Treatment Plan for ADHD That Restores Attention, Minimizes Hyperactivity, and Helps Eliminate Drug Side Effects, by James Greenblatt, MD (Harmony, 2017).

The Good Mood Kitchen: Simple Recipes and Nutrition Tips for Emotional Balance, by Leslie Korn (Norton, 2017).

Herb, Nutrient, and Drug Interactions: Clinical Implications and Therapeutic Strategies, by Mitchell Bebel Stargove, Jonathan Treasure, and Dwight McKee (Mosby, 2007).

An Integrative Paradigm for Mental Health Care: Ideas and Methods Shaping the Future, by James H. Lake (Springer, 2019).

Integrative Mental Health Care: A Therapist's Handbook, by James Lake (Norton, 2015).

Life Extension Magazine, a monthly publication of the Life Extension Foundation on topics of nutrition, hormones, and antiaging supplements: https://www.lifeextension.com/magazine

Medicines of the Jungle, by Leslie Korn (DayKeeper Press, 2010).

Natural Woman: Herbal Remedies for Radiant Health at Every Age and Stage of Life, by Leslie Korn (Shambhala Books, 2019).

Preventing and Treating Diabetes Naturally: The Native Way, by Leslie Korn and Rudolph Rÿser (DayKeeper Press, 2009).

Rhythms of Recovery: Integrative Medicine for PTSD and Complex Trauma (2nd ed.), by Leslie Korn (Routledge, 2023).

Somatic Therapy: Belly Therapy for Digestion and Rocking for Mental Health, YouTube video by Leslie Korn: https://www.youtube.com/watch?v=ydqPuquexXg.

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About the Author

Leslie Korn has a clinical practice in integrative medicine and nutrition for mental health, specializing in complex trauma and the tapering of psychotropic medications. She holds an MA from Lesley University, an MPH from Harvard, and a PhD in behavioral medicine from the Union Institute. She was a clinical fellow in psychology and religion at Harvard Medical School and a Fulbright research scholar in ethnobotany in Mexico. Nationally board-certified in massage and bodywork and functional nutrition and supervision, she has practiced as a somatic psychotherapist for over 45 years. In 1977, Dr. Korn founded the Center for Traditional Medicine, a pro bono clinic serving Indigenous communities in Mexico and the Pacific Northwest. She teaches clinicians about nutrition and integrative approaches to mental health and is the author of nine books, including *Rhythms of Recovery*. Her most recent work includes writing and producing documentaries focused on nutrition trauma and Indigenous food sovereignty.

Advance Praise

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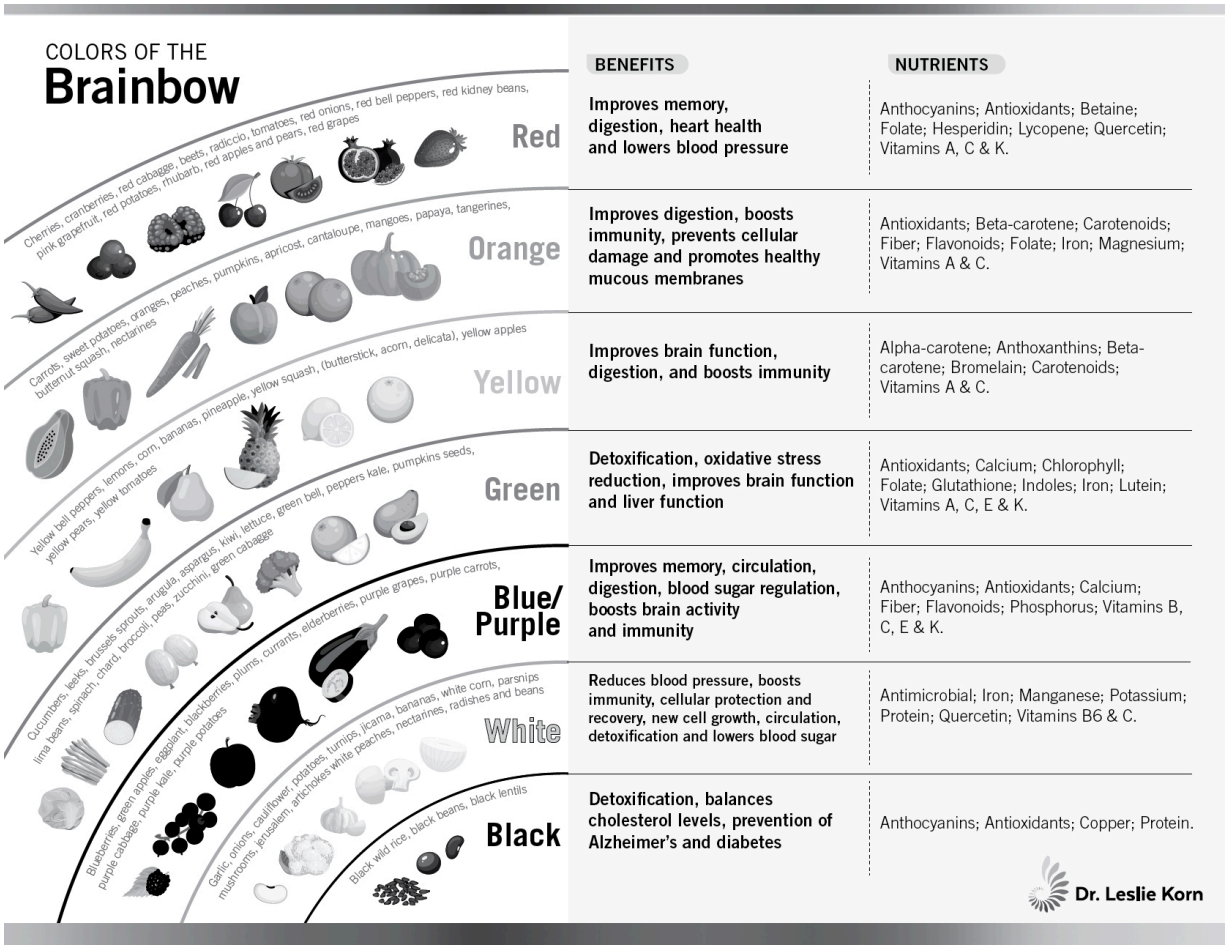
COLORS OF THE
Brainbow
BENEFITS
NUTRIENTS
Red
Cherries, cranberries, red cabagge, beets, radiccio, tomatoes, red onions, red bell peppers, red kidney beans, pink grapefruit, red potatoes, rhubarb, red apples and pears, red grapes
Improves memory, digestion, heart health and lowers blood pressure
Anthocyanins; Antioxidants; Betaine; Folate; Hesperidin; Lycopene; Quercetin; Vitamins A, C & K.
Orange
Carrots, sweet potatoes, oranges, peaches, pumpkins, apricost, cantaloupe, mangoes, papaya, tangerines, butternut squash, nectarines
Improves digestion, boosts immunity, prevents cellular damage and promotes healthy mucous membranes
Antioxidants; Beta-carotene; Carotenoids; Fiber; Flavonoids; Folate; Iron; Magnesium; Vitamins A & C.
Yellow
Yellow bell peppers, lemons, corn, bananas, pineapple, yellow squash, (butterstick, acorn, delicata), yellow apples yellow pears, yellow tomatoes
Improves brain function, digestion, and boosts immunity
Alpha-carotene; Anthoxanthins; Beta-carotene; Bromelain; Carotenoids; Vitamins A & C.
Green
Cucumbers, leeks, brussels sprouts, arugula, asparagus, kiwi, lettuce, green bell, peppers kale, pumpkins seeds, lima beans, spinach, chard, broccoli, peas, zucchini, green cabagge
Detoxification, oxidative stress reduction, improves brain function and liver function
Antioxidants; Calcium; Chlorophyll; Folate; Glutathione; Indoles; Iron; Lutein; Vitamins A, C, E & K.
Blue/ Purple
Blueberries, green apples, eggplant, blackberries, plums, currants, elderberries, purple grapes, purple carrots, purple cabbage, purple kale, purple potatoes
Improves memory, circulation, digestion, blood sugar regulation, boosts brain activity and immunity
Anthocyanins; Antioxidants; Calcium; Fiber; Flavonoids; Phosphorus; Vitamins B, C, E & K.
White
Garlic, onions, cauliflower, potatoes, turnips, jicama, bananas, white corn, parsnips mushrooms, jerusalem, artichokes white peaches, nectarines, radishes and beans
Reduces blood pressure, boosts immunity, cellular protection and recovery, new cell growth, circulation, detoxification and lowers blood sugar
Antimicrobial; Iron; Manganese; Potassium; Protein; Quercetin; Vitamins B6 & C.
Black
Black wild rice, black beans, black lentils
Detoxification, balances cholesterol levels, prevention of Alzheimer's and diabetes
Anthocyanins; Antioxidants; Copper; Protein.
Dr. Leslie Korn

The fruits and vegetables are categorized into seven color groups: Red, Orange, Yellow, Green, Blue or Purple, White, and Black each associated

with specific mental and physical health benefits and nutritional properties. Red Group: Includes strawberries, tomatoes, apples, red kidney beans, and pomegranates. Benefits: improves memory, digestion, heart health, and lowers blood pressure. Nutrients: anthocyanins, antioxidants, betaine, folate, hesperidin, lycopene, coenzyme Q10, vitamins A, C, and K. Orange Group: Includes carrots, sweet potatoes, oranges, pumpkins, papayas, and mangoes. Benefits: boosts immunity, enhances digestion, protects mucous membranes, and prevents cellular damage. Nutrients: carotenoids, beta-carotene, flavonoids, fiber, iron, and vitamins A and C. Yellow Group: Features bananas, yellow apples, pineapples, corn, and lemons. Benefits: supports brain function, digestion, and immunity. Nutrients: alpha-carotene, beta-carotene, bromelain, and vitamins A and C. Green Group: Contains broccoli, kale, spinach, avocado, limes, cucumbers, and green apples. Benefits: detoxification, oxidative stress reduction, and support for brain and liver function. Nutrients: chlorophyll, calcium, glutathione, indoles, and vitamins C, E, A, and K. Blue/Purple Group: Includes blueberries, eggplants, grapes, and plums. Benefits: enhances memory, circulation, and digestion; supports blood sugar regulation and brain activity. Nutrients: anthocyanins, fiber, flavonoids, potassium, calcium, and vitamins B, C, and E. White Group: Displays garlic, onions, cauliflower, mushrooms, and pears. Benefits: lowers blood pressure, improves immunity, and supports cellular recovery. Nutrients: antimicrobial compounds, manganese, potassium, quercetin, and vitamins B6 and C. Black Group: Includes black beans, blackberries, black sesame seeds, and dark olives. Benefits: promotes detoxification, balances cholesterol levels, and helps prevent Alzheimer’s and diabetes. Nutrients: anthocyanins, copper, antioxidants, and protein.

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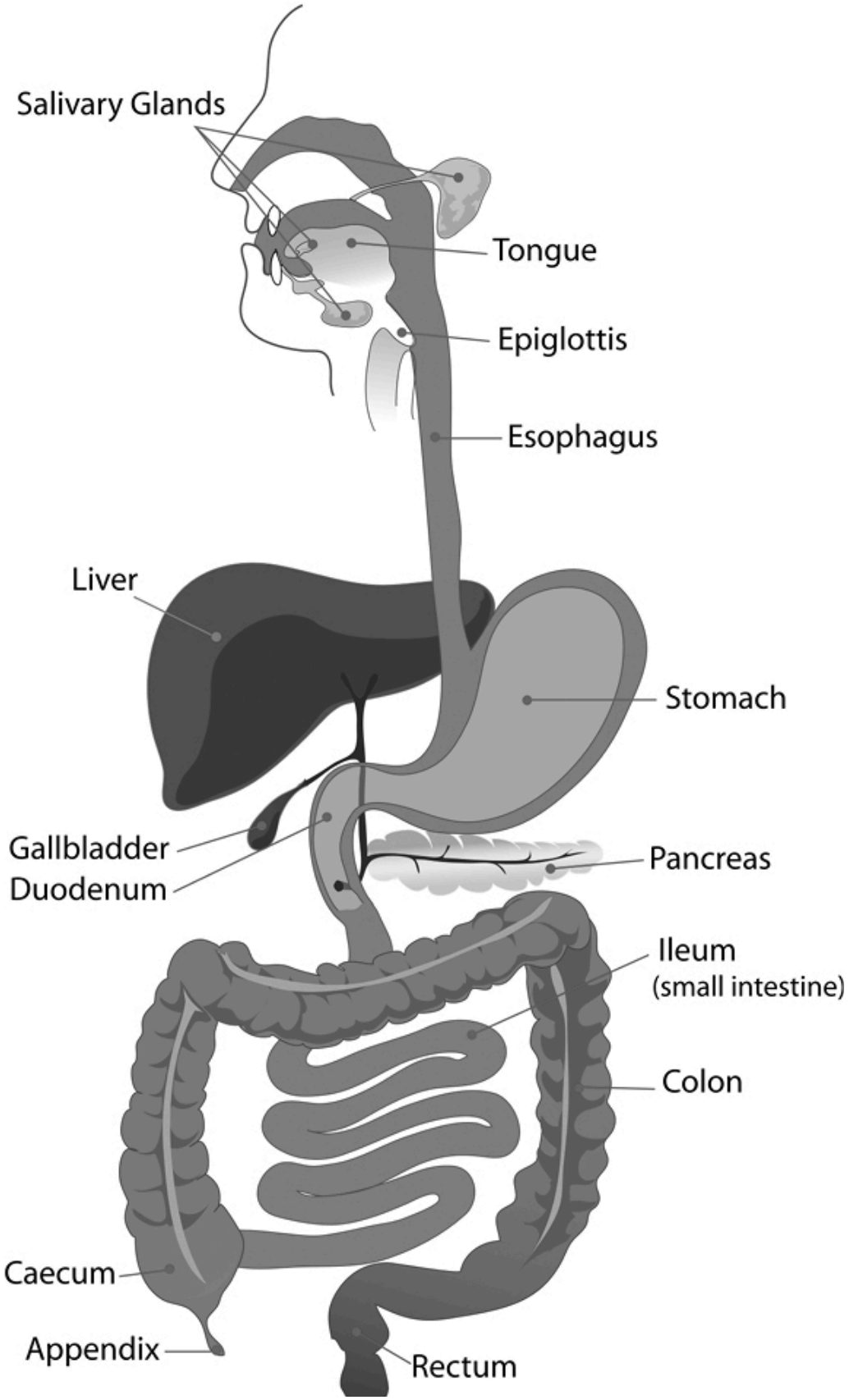
Salivary Glands
Tongue
Epiglottis
Esophagus
Liver
Stomach
Gallbladder
Duodenum
Pancreas
Ileum
(small intestine)
Colon
Caecum
Appendix
Rectum

The diagram begins at the top with the salivary glands, followed by the tongue, epiglottis, and esophagus, which channels food to the stomach. Adjacent to the stomach are the liver, gallbladder, and duodenum (first section of the small intestine). Below the stomach is the pancreas, positioned near the ileum (a segment of the small intestine). The large intestine is divided into the colon, caecum, appendix, and rectum, ending at the anus.

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